IPICO SPORTS ELITE READER
USER MANUAL

NOTIFICATIONS AND ADVISEMENT

FCC Identification – VHYIP3911A

This device complies with Part 15 of the Federal Communications Commission rules indicating that the operation of the IPICO Sports Elite Reader is subject to the two following conditions:

1. The device may not cause harmful interference.
2. The device must accept any interference received, including interference that may cause undesired operation.

PRECAUTIONS FOR USE

It is recommended that the following operational concerns be addressed before operation of the reader for the first time and before operation of the reader after a significant period of disuse.

1. Fully charge the reader's internal battery before the first use of the reader.
2. Fully charge the reader's internal battery before events.
3. The reader's internal battery should be fully charged every two months in the case that the reader unit has not been recently used. This should be done so that the battery is maintained in correct and working order.

REVISION HISTORY

VERSION	DATE	PURPOSE
Draft 1.0	15/09/2006	Creation
Draft 1.1	27/10/2006	Editing and enhancement
Draft 1.2	22/11/2006	Editing and enhancement, added mat configurations
Draft 1.3	05/04/2007	Added reader communication section, modified mat configuration, specifications and installation sections
Draft 1.4	11/04/2007	Removed RX color-coding, added inch and foot dimensions, new front place, additional diagrams
Draft 1.5	18/04/2007	Modified mat configuration, added 6-meter mat line, added information (summary of facilities)
Draft 1.6	10/07/2007	Added external +12-volt pin polarity on front plate Added external loud buzzer picture Added reader data protocol, command port sections Change on NTP, Version, First Seen/Last Seen, XML Removed Dimi start/stop function Added battery management appendix Add optional accessories appendix
Draft 1.7	19/07/2007	Added FCC Part 15 information Added port layout summary Modified Webmin explanations
Issued Version 1.00	01/09/2007	Updated precautions
Issued Version 2.3	01/22/2008	Updated reader images Modified Webmin interface explanation Added additional notes on functionality

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1 INTRODUCTION

The purpose of this document is to detail the functional parts, functions, operations and capabilities of the IPICO Sports Elite Reader. Please note that the following capabilities, functions and operations can be affected by setup environment. It is recommended that users fully read this manual in order to obtain optimal system performance.

2 SUMMARY OF CAPABILITIES / FEATURES

The IPICO Sports Elite Reader has the following capabilities and features:

- Ability to drive 4 reading mats (2 meters x 1 meter each), equivalent to an 8 meter timing line for one reader or 4 meters with a second 4 meter line for backup. With 2 readers, a 16 meter timing line is possible
- Data is stored on an internal CF (Compact Flash) card with a battery backup
- Ethernet port (RJ45) allows for communication between a reader and computer or computer network (including wireless Ethernet communications)
- Internal power supply by battery for mobile applications
- External power supply provides 12 Volts DC or 110-220 Volts AC (50-60 Hz)
- External connectors for supplementary power supply by battery
- External connector for a fast charging solution (3 hour charge, only can be used with IPICO Sports Fast Charger – Product Code IP0904)
- Input connectors for date-time stamp devices (can be used with an acoustic coupler for gun starts)
- Battery management components: audible warnings (beeps) on low voltage or incorrect input polarity and battery level indicator (analog dial)
- One On/Off rotary switch for simple operation
- LEDs and internal buzzer for notification of tag read/detection
- Optional inputs for external buzzer hardware (Product Code IP2911)
- DSPs to increase detection of tags in electromagnetically intense environments
- Internal automatic radio-frequency tuning
- Durable aluminum/plywood road case
- Venting for reader to adjust to ambient temperature in warmer climates

3 READER HARDWARE INTERFACE

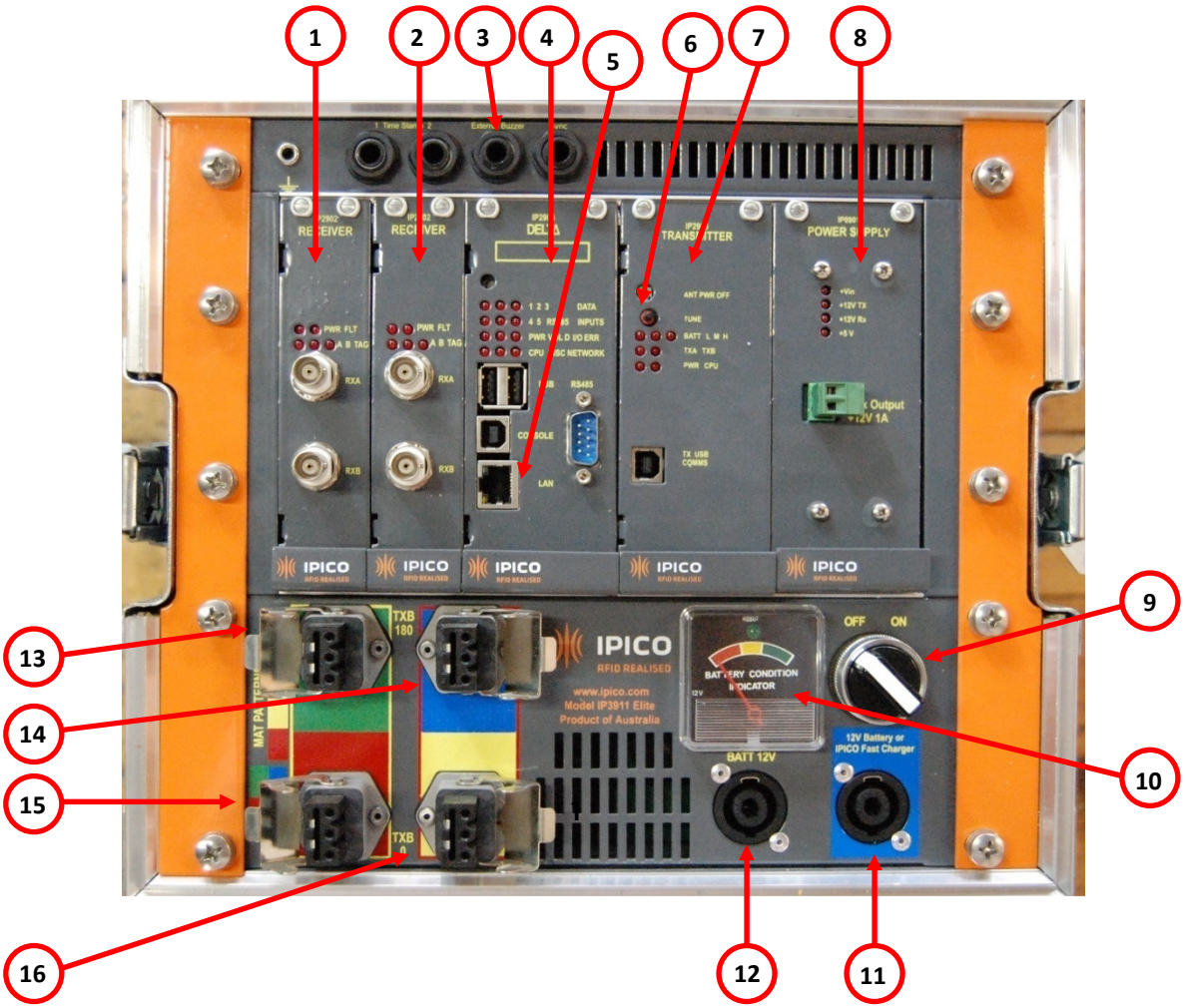


FIGURE 1 – DIAGRAM OF ELITE READER INTERFACE

1. Receiver Module	9. On/Off Rotary Switch
2. Receiver Module	10. Battery Condition Indicator
3. External Buzzer Connector	11. IPICO Fast Charger Connector
4. Delta Module	12. 12 Volt Battery Connector
5. Ethernet (RJ45) Connector	13. TX A Transmitter (Green)
6. Manual Tune Switch	14. TX A Transmitter (Blue)
7. Transmitter Module	15. TX B Transmitter (Red)
8. Power Supply Module	16. TX B Transmitter (Yellow)

3.1 FRONT PANEL

All cable connections required for operation of the Elite Reader are located on the above-pictured front panel. Figure 1 shows a photograph of the front panel of the reader. Descriptions of each

portion of the faceplate will be done in detail in the following pages. The reader's front panel is powder-coated Zinc annealed steel.

3.1.1 RECEIVER MODULES

The IPICO Sports Elite Reader has 2 dual-channel Receiver modules. These units collect tag data from the Receive (RX) loops in the connected mats. As tags are read, the modules emit audible read signals.

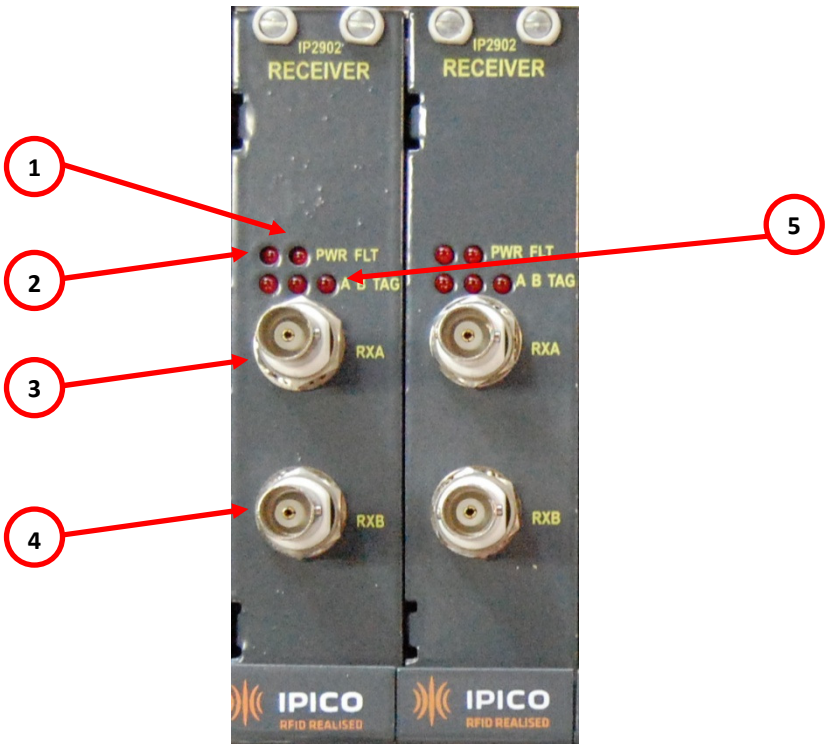


FIGURE 2 – DIAGRAM OF RECEIVER MODULES

1. Fault Indicator
2. Receiver Unit Power Indicator
3. Receiver (RX) A Socket
4. Receiver (RX) B Socket
5. Tag Read Indicators (A,B, Tag)

1. Fault Indicator

This indicator's LED light will only appear when there are communication issues in the receiver.

2. Receiver Unit Power Indicator

This indicator's LED will light up when the reader is powered. This LED indicates that the receiver unit has power.

3. Receiver (RX) A Socket

Connection for the small, round connector (BNC connector) of the timing mats. While it does not matter which connector is connected to which receiver socket, it is advised that mat order be kept consistent.

4. Receiver (RX) B Socket

Connection for the small, round connector (BNC connector) of the timing mats. While it does not matter which connector is connected to which receiver socket, it is advised that mat order be kept consistent.

5. Tag Read Indicators (A,B,TAG)

The receiver modules have three tag read indicator LEDs. The A and B LEDs represent the RX A, and RX B sockets. The TAG indicator lights when the receiver is sending information to the Delta module.

3.1.2 DELTA MODULE

The Delta module receives data passed to it by the Receiver modules, and stores the information received on the CF (Compact Flash) card residing on its circuit board. This module also streams this data live during race sessions over the reader's Ethernet (RJ45, Figure 1 - #5), and this streamed data can be downloaded to a computer from the Delta Ethernet port at any time.

Normal operation of the Delta module allows the module to stay on for up to 120 seconds (2 minutes) after the shutdown of the reader. This allows for the data received to be safely stored and other functions of the reader to continue their respective shutdown processes.

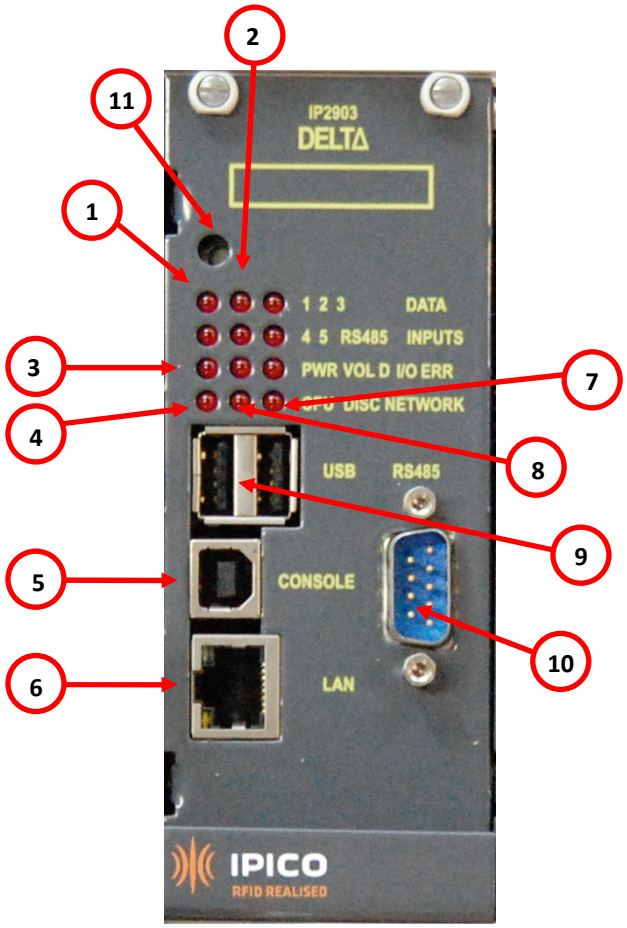


FIGURE 3 – DIAGRAM OF DELTA MODULE

1. Data from Receiver 2
2. Data from Receiver 1
3. Delta Unit Powered Indicator
4. CPU Activity Indicator
5. Console Port
6. Ethernet (RJ45) Connector
7. Ethernet (RJ45) Connector
8. Network Activity Indicator
9. Disc Activity Indicator
10. USB Ports
11. Reset Button

1. Data from Receiver 1

This LED indicates that data is being received from Receiver (RX) 1 (the left-most Receiver).

2. *Data from Receiver 2*

This LED indicates that data is being received from Receiver (RX) 2 (the right-most Receiver).

3. *Delta Unit Powered Indicator*

This indicator will be lit when the Delta is powered.

4. *CPU Activity Indicator*

The flashing of this indicator's LED indicates that the Delta's microprocessor is processing data, and is operating.

5. *Console Port*

This port is for maintenance purposes only. It is not accessible by the user, and should only be used by IPICO Sports technical staff, unless otherwise indicated.

6. *Ethernet (RJ45) Connector*

The Ethernet Connector allows for the reader to be joined to a network or computer via networking cables. To network the reader to a specific computer, please use the cross-over cable (CAT-6) cable packed with the reader.

7. *Network Activity Indicator*

This indicator's LED will flash when network activity is being processed by the reader.

8. *Disc Activity Indicator*

The Disc Activity LED will be lit when the reader is accessing its internal CF (Compact Flash) card memory.

9. *USB Ports*

Currently inactive, these ports serve as platforms for future expansion of functionality including USB memory key logging and other functions to be added.

10. *RS485 Input Port*

Though currently inactive as well, this port is again planned for future expansion of hardware and software capabilities.

11. *Reset Button*

Pressing this button will cause the Delta Module to completely reset, rendering the module unresponsive to user commands during startup time (approx. 1-2 mins.).

3.1.3 TRANSMITTER MODULE

The reader's Transmitter module provides power to the mats in order to create the different frequency radio fields used to power and read IPICO Sports tags.

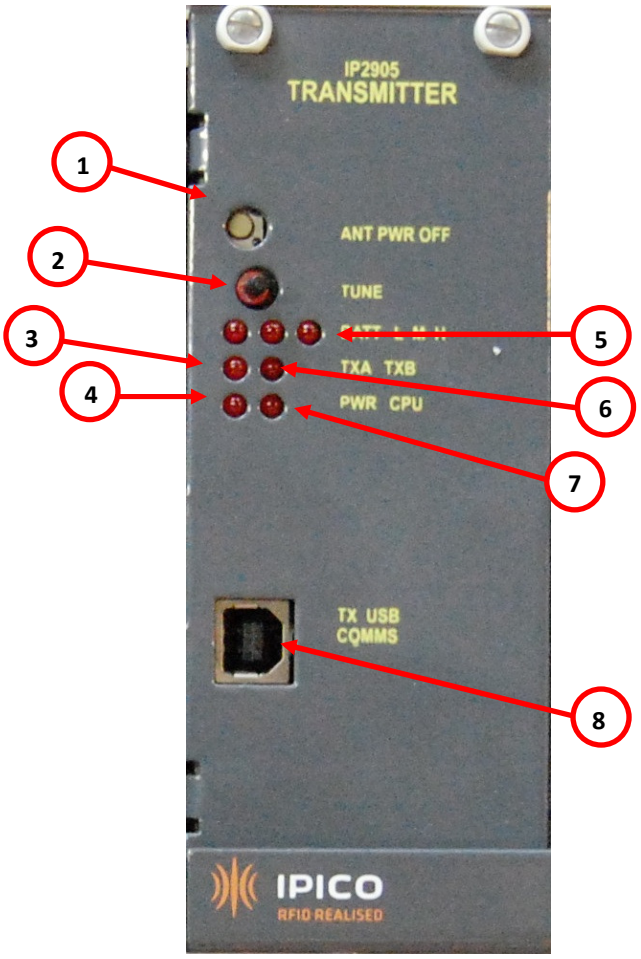


FIGURE 4 – DIAGRAM OF TRANSMITTER MODULE

1. Antenna Power Off Switch	5. Battery Level Indicator
2. Manual Tuning Switch	6. Transmitter (TX) B Tuning Status
3. Transmitter (TX) A Tuning Status	7. CPU Activity Indicator
4. Transmitter Power Indicator	8. Transmitter Console Port

1. Antenna Power Off Switch

The Antenna Power Off switch disables power routing to the timing mats, and discontinues the reader's ability to obtain tag reads. When the antenna power is off, a continuous tone is heard to indicate that this switch has been pressed. To re-enable power routing to the timing mats, simply press it; the tone will cease and the mats will regain power.

2. Manual Tuning Switch

Pressing this switch begins the reader's mat tuning process, a process that takes place every 5 (five) minutes. If timing mats are connected to the reader at the time of startup, the reader will

automatically tune to the given mat state. However, if mats are added after powering the reader, a rapid series of "beeps" will be heard. This indicates that the reader's tuning process has recognized that new mats need to be tuned. Press the Manual Tuning Switch to tune the reader to the current mat state.

3. Transmitter (TX) A Tuning Status

The A channel of the Transmitter (TX A) supports two mats, the red and green mats (Figure 1- #13, #15) as seen in the lower left-hand corner of the reader's main interface (Figure 1). If the mats in the red or green Transmitter connectors (Figure 1 - #13, #15) are detuned, this LED will flash and the transmitter will emit an audible detuned signal. See information on the *Manual Tuning Switch* in the above figure (Figure 4 - # 2).

4. Transmitter Power Indicator

This indicator will be lit when the reader is powered to indicate that the Transmitter module is also powered.

5. Battery Level Indicator

The three LEDs comprising the Battery Level Indicator, marked "L," (Low) "M," (Medium) and "H," (High) indicate the voltage level being supplied to the Transmitter unit. As this voltage is managed by the Power Supply Module (see below), the voltage indicators should always remain in either the "M" (Medium) or "H" (High) range.

6. Transmitter (TX) B Tuning Status

The B channel of the Transmitter (TX B) supports two mats, the blue and yellow mats (Figure 1- #14, #16) as seen in the lower left-hand corner of the reader's main interface (Figure 1). If the mats in the blue or yellow Transmitter connectors (Figure 1 - #14, #16) are detuned, this LED will flash and the transmitter will emit an audible detuned signal. See information on the *Manual Tuning Switch* in the above figure (Figure 4 - # 2).

7. CPU Activity Indicator

This LED indicates that the microprocessor located on the Transmitter module is working correctly. When operating, this LED will flash at half-second intervals.

8. Transmitter Console Port

This port is for maintenance purposes only. It is not accessible by the user, and should only be used by IPICO Sports technical staff, unless otherwise indicated.

3.1.4 POWER SUPPLY MODULE

The Power Supply Module manages the power supply and distribution to the IPICO Sports Elite Reader.

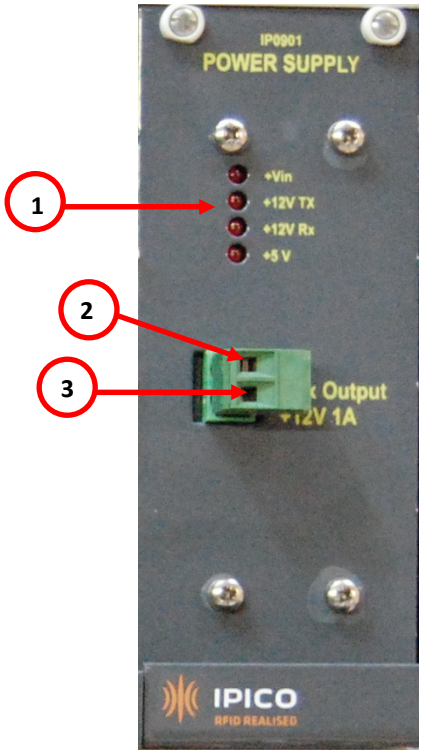


FIGURE 5 – DIAGRAM OF POWER SUPPLY MODULE

1. Power Supply Indicators
2. Auxiliary Output, Negative Pin
3. Auxiliary Output, Positive Pin

1. Power Supply Indicators

These indicators refer to their various (labeled) power levels. The +Vin LED refers to the power coming into the Power Supply module from the battery. The +12V TX indicator represents the power routed to the operation of the Transmitter (TX). The +12V RX indicator shows the status of power being routed to the Receivers (RX).

2. Auxiliary Output, Negative Pin

The Auxiliary Output, labeled by individual pin in this diagram, puts out 12 Volts of potential and 1 Ampere of current. This pin is identified as the Negative pin of that outlet. This output can power any device fitting the 12V, 1A profile, but is usually used to power network equipment (routers, switches, et al.).

3. Auxiliary Output, Positive Pin

The Auxiliary Output, labeled by individual pin in this diagram, puts out 12 Volts of potential and 1 Ampere of current. This pin is identified as the Positive pin of that outlet. This output can power any device fitting the 12V, 1A profile, but is usually used to power network equipment (routers, switches, et al.).

3.1.5 UNIT TOP PANEL

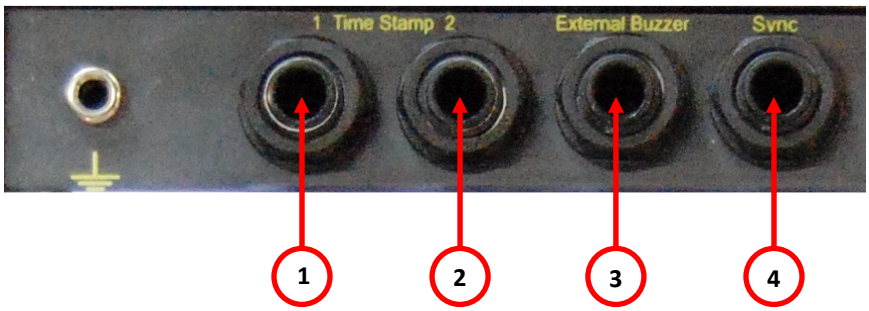


FIGURE 6 – DIAGRAM OF UNIT TOP PANEL

1. Time Stamp 1	3. External Buzzer Connector
2. Time Stamp 2	4. Synchronization Connector

1. Time Stamp 1

This connector accepts connections such as acoustic couplers (starting guns) or external switches. When the external source connected to this connector is initialized or used, the reader simply inserts a time stamp into the reader's maintenance file.

2. Time Stamp 2

This connector accepts connections such as acoustic couplers (starting guns) or external switches. When the external source connected to this connector is initialized or used, the reader simply inserts a time stamp into the reader's maintenance file.

3. External Buzzer Connector

The External Buzzer Connector is reserved for use with a 12 Volt DC external buzzer unit (Product Code – IP 2911).

4. Synchronization Connector

This connector is reserved for future hardware and software development.

3.1.6 UNIT BOTTOM PANEL

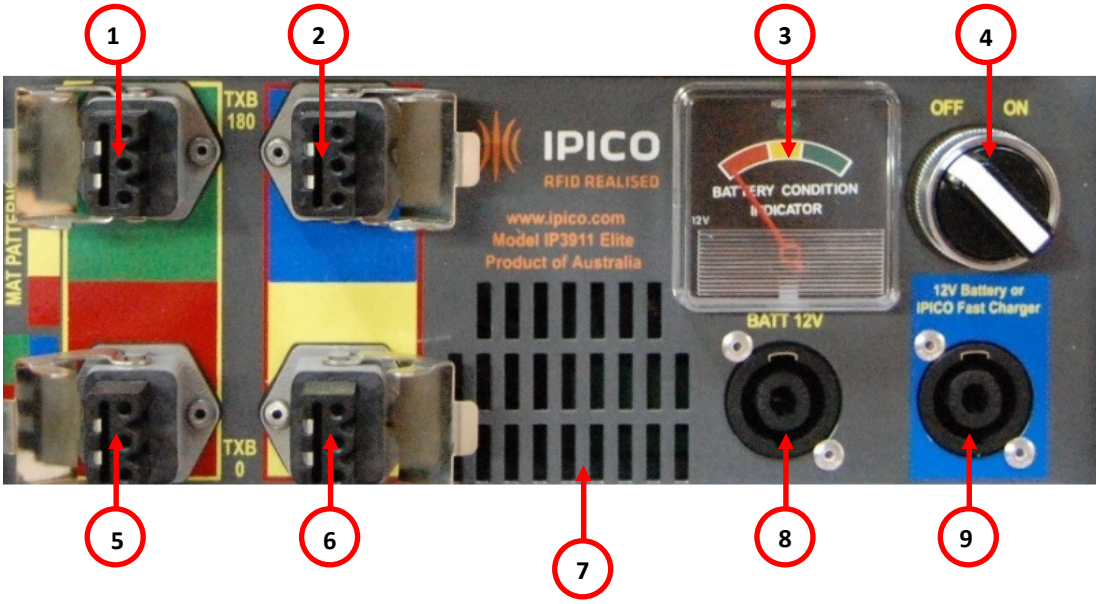


FIGURE 7 – DIAGRAM OF UNIT BOTTOM PANEL

1. TX A Transmitter (Green)	6. TX B Transmitter (Yellow)
2. TX B Transmitter (Blue)	7. Venting Grate
3. Battery Condition Indicator	8. 12 Volt Battery Connector
4. On / Off Rotary Switch	9. IPICO Fast Charger Connector
5. TX A Transmitter (Red)	

1. *TX A Transmitter (Green)*

These transmitter inputs (Figure 7, #1,2,5,6) correspond with their listed, color-coded timing mat.

2. *TX B Transmitter (Blue)*

These transmitter inputs (Figure 7, #1,2,5,6) correspond with their listed, color-coded timing mat.

3. *Battery Condition Indicator*

This analog gauge reports the condition of the reader's internal battery through a three-color system. If the needle rests in the green region, this indicates a safe operational charge; yellow indicates a diminished battery charge; red indicates that the battery is low. **NOTE:** Some reader units may have a digital readout in the place of the analog gauge pictured above.

4. *On / Off Rotary Switch*

Rotating this switch between the "On" and "Off" positions turns reader on and off, respectively.

5. *TX A Transmitter (Red)*

These transmitter inputs (Figure 7, #1,2,5,6) correspond with their listed, color-coded timing mat.

6. *TX B Transmitter (Yellow)*

These transmitter inputs (Figure 7, #1,2,5,6) correspond with their listed, color-coded timing mat.

7. *Venting Grate*

Due to the reader's ability to adjust to ambient temperature without the use of internal fans, this venting grate allows for air to circulate in and out of the reader unit.

8. *12 Volt Battery Connector*

This battery connector allows for an external 12 Volt battery (automotive, et al.) to be connected.

9. IPICO Fast Charger Connector

This connector allows for the IPICO Sports Fast Charger (IP0904) to be used with the reader.

4 MATS

4.1 MAT OVERVIEW

IPICO Sports timing mats come in two different sizes: 2.5 meter and 5 meter. The IPICO Sports Elite Reader can be used with four (4) 2.5 meter mats or two (2) 5 meter mats.

FIGURE 8 – 2.5 METER MATS IN MAT BAGS

FIGURE 9 – 2.5 METER MAT WITH BAG OPEN

FIGURE 10 – 2.5 METER MAT UNPACKED

4.2 MAT CONFIGURATIONS

NOTE: The following diagrams and pictures take into account the best practices used in order to operate the IPICO Sports Elite Reader at optimal performance. While other mat configurations may be used, the diagrams and pictures below will take into account the most common and most effective formats.

4.2.1 2.5 M MAT SETUPS

FIGURE 12 – 2.5 M MAT SETUP (MATS IN PARALLEL)

FIGURE 13 – 2.5 M MAT SETUP (MATS IN SERIES)

4.2.2 5 M MAT SETUPS

FIGURE 14 - 5 M MAT SETUP (MATS IN PARALLEL)

FIGURE 15 – 5 M MAT SETUP (MATS IN SERIES)

4.2.3 MAT LAYOUT INSTRUCTIONS

IPICO Sports timing mats come two different lengths (as pictured above), the 2.5-meter and 5-meter types. While these mats are differentiated by color at the reader level, the mat colors also correspond with their individual cable lengths.

MAT COLOR	2.5 M CABLE LENGTH	5 M CABLE LENGTH
GREEN	10 M	10 M
BLUE	10 M	10 M
RED	5 M	
YELLOW	5 M	

Considering the cable lengths listed above, it is important to layout the mats in a specific cable length-oriented order. Thus with either setup, it is recommended that the user lay out the **blue** and **green** mats first in order to create a timing line of optimal size.
Also, in order to account for participant safety and proper timing mat functionality, mat cables must be tucked underneath the mats and run down the underlying **center** of any mats in series as the following diagram illustrates, given a timing line that resembles **Figure 16**. **FAILURE TO PLACE MAT CABLES SQUARELY UNDER THE CENTER OF EACH MAT WILL ADVERSELY IMPACT PERFORMANCE OF THE MATS TO A DRAMATIC DEGREE.**

FIGURE 16 – 2.5 M MAT SETUP AND CABLE ORIENTATION

FIGURE 17 – 5 M MAT SETUP AND CABLE ORIENTATION

When using IPICO Sports Timing mats, it is also important to note that the mats should overlap thirty (30) centimeters or approximately one (1) foot. This ensures that there are no disruptive irregularities in the radio-frequency field created by the antenna mats.

FIGURE 18 – MAT OVERLAP

4.2.4 CONNECTING MATS

FIGURE 19 – CONNECTING MATS TO THE RECEIVERS

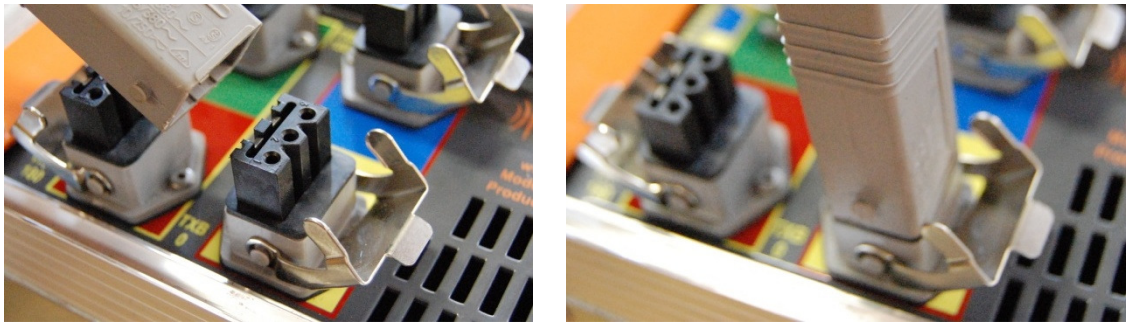


FIGURE 20 – CONNECTING MATS TO THE TRANSMITTERS

To connect timing mats to the IPICO Sports Elite Reader, follow the steps listed below and illustrated above in **Figure** :

1. Connect the smaller, round BNC connection (Bayonet Neill Concelman) to the appropriate receiver (RX) connector. In the pictured example, a “yellow” 2.5-meter mat is used, thus, the appropriate receiver connector is the “RX B” connector on the second (right-most) receiver (Figure 1, item 2).
2. With the larger gray connector in hand, locate the corresponding, color-coded transmitter (TX) connector. Again, because the example uses a “yellow” 2.5-meter mat, the appropriate connection is that of the yellow-colored “TX B” connection (Figure 1, item 16).
3. Repeat these steps for all mats which are desired to be connected.

5 TAG PRODUCTS

NOTE: The following two items are the only tag products that work with the IPICO Sports Elite Reader system.

5.1 IPICO SPORTS SHOE TAG (SPORTAG)

The IPICO Sports Shoe tag (Sportag) is used for normal road-race applications. These tags feature Dual-Frequency (125 kHz / 6.8 mHz) compatibility, and are globally compliant with spectrum specifications.

5.2 IPICO SPORTS MULTI-SPORT TAG

The IPICO Sports Multi-sport tag is recommended for use with multi-stage, multi-sport events. Fabrifoam® straps can be ordered from IPICO Sports in order to allow the participant to easily attach the Multi-sport tag. These tags feature Dual-Frequency (125 kHz / 6.8 mHz) compatibility, and are globally compliant with spectrum specifications.

6 READER COMMUNICATION

NOTE: To connect directly to an IPICO Sports Elite Reader, the use of the orange crossover cable provided or a compatible alternative (CAT 5E, CAT 6 crossover cabling) is required.

6.1 NETWORK COMMUNICATION CONFIGURATION

In order to communicate with the IPICO Sports Elite Reader, the interfacing device (computer, et al.) must have its network configuration corrected such that it is on a network consistent with the IPICO Sports Elite Reader system. The following subsections will detail settings changes necessary for network operation in both the Microsoft Windows XP and Vista environments.

6.1.1 MICROSOFT WINDOWS XP

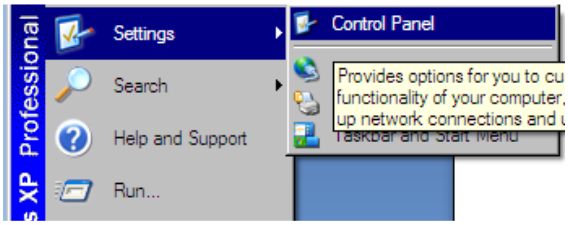


FIGURE – WINDOWS XP START MENU

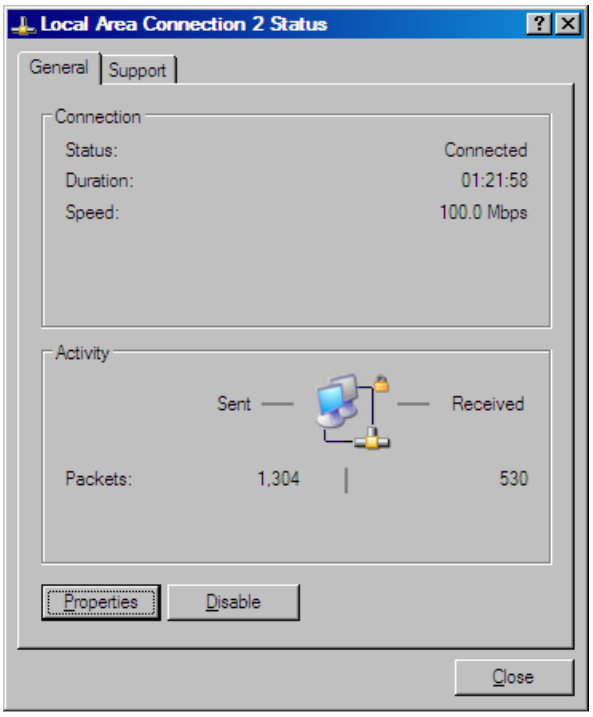
To access the Control Panel, where Microsoft Windows XP network settings reside, navigate to the "Start Menu" in the lower left-hand corner of the Microsoft Windows XP screen, on the taskbar. Clicking the "Start" button will reveal the above-pictured menu. Navigate to the "Settings" entry, highlighting it. This will reveal a sub-menu, at the top of which is the "Control Panel" option. Click this option, and the Microsoft Windows XP Control Panel will appear.

FIGURE 21 – "NETWORK CONNECTIONS" ICONS

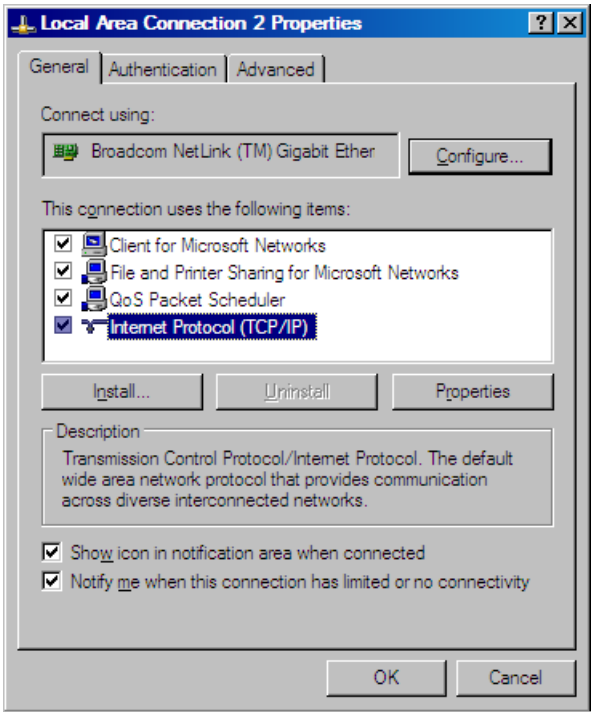
When Microsoft XP Windows Control Panel has been opened, navigate to either of the two above-pictured icons. Click on the appropriate icon to enter the "Network Connections" screen.

FIGURE 22 – "LOCAL AREA CONNECTION" ICON

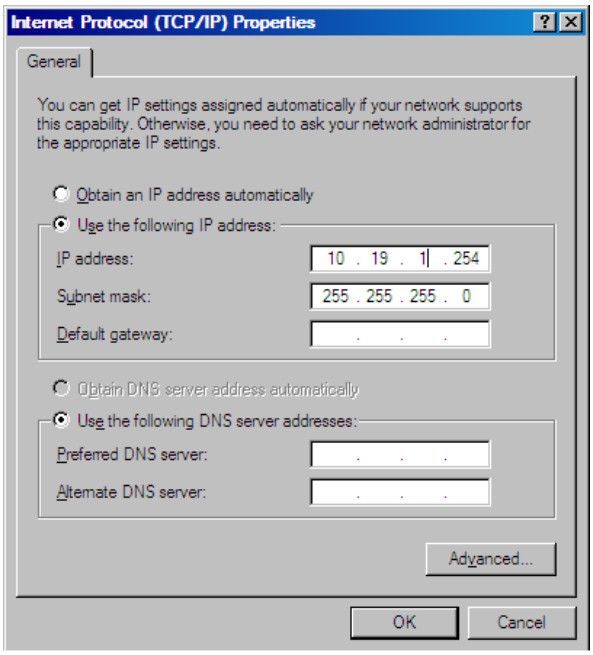
When at the "Network Connections" screen, locate an icon similar to the above-pictured "Local Area Connection" icon. Double-click on the icon to launch the "Local Area Connection Properties" window.



STEP 1 – CLICK ON"PROPERTIES"



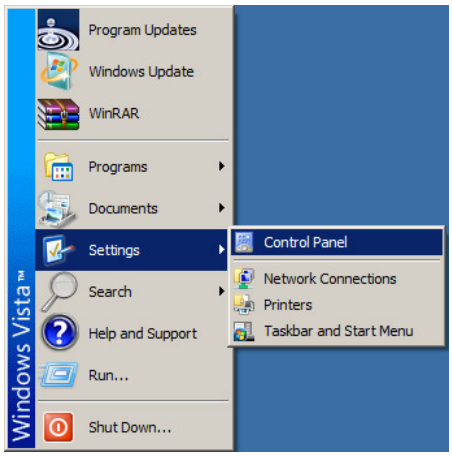
STEP 2 – HIGHLIGHT "INTERNET PROTOCOL (TCP/IP)" AND CLICK "PROPERTIES"


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 10 . 19 . 1 . 254
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

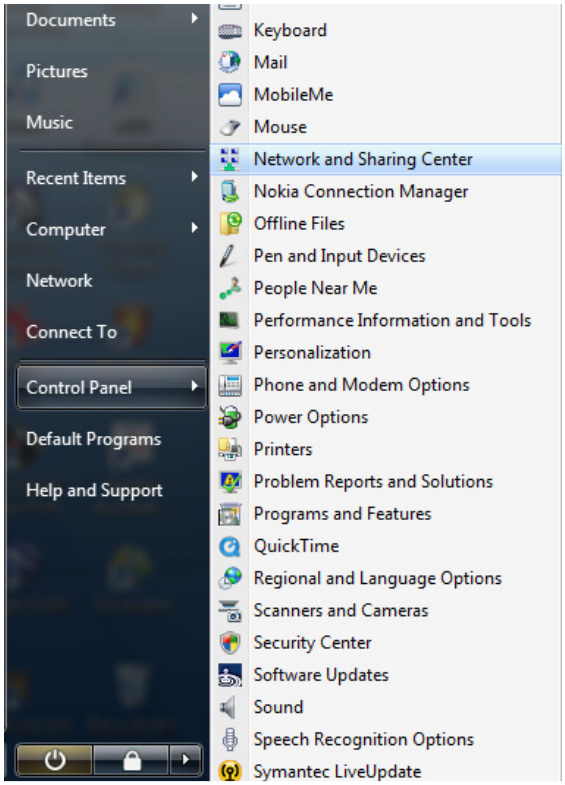
STEP 3 – CLICK "USE THE FOLLOWING IP ADDRESS" AND SPECIFY THE ADDRESSES AS LISTED, CLICKING "OK" TO EXIT AND SAVE

6.1.2 WINDOWS VISTA

WINDOWS VISTA *CLASSIC*



WINDOWS VISTA *AERO*



To access the desired network settings, navigate to the Microsoft Windows Vista Control Panel by either method pictured above (Microsoft Windows Vista *Classic* and *Aero* pictured). Once at the Control Panel, find and select the "Network Sharing Center" option.

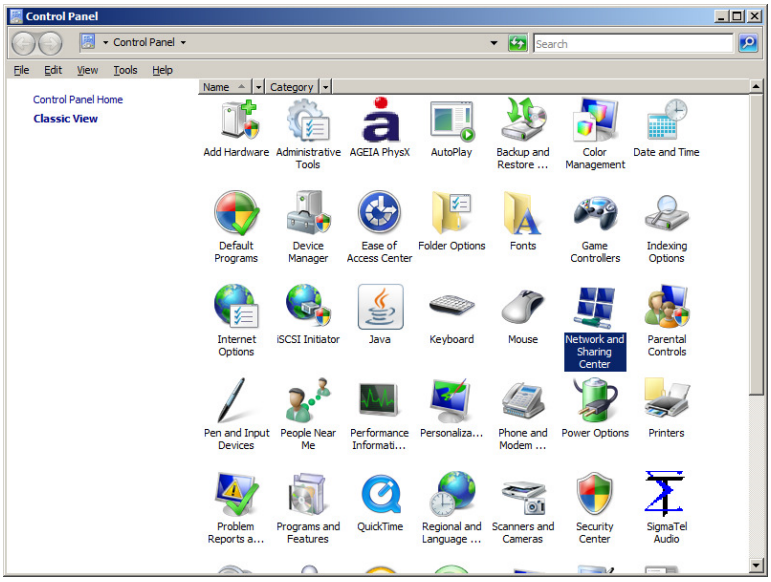


FIGURE 23 – MICROSOFT WINDOWS VISTA NETWORK AND SHARING CENTER ICON

To open the Microsoft Windows Vista Network and Sharing Center, double click the Network and Sharing Center icon, launching the following screen:

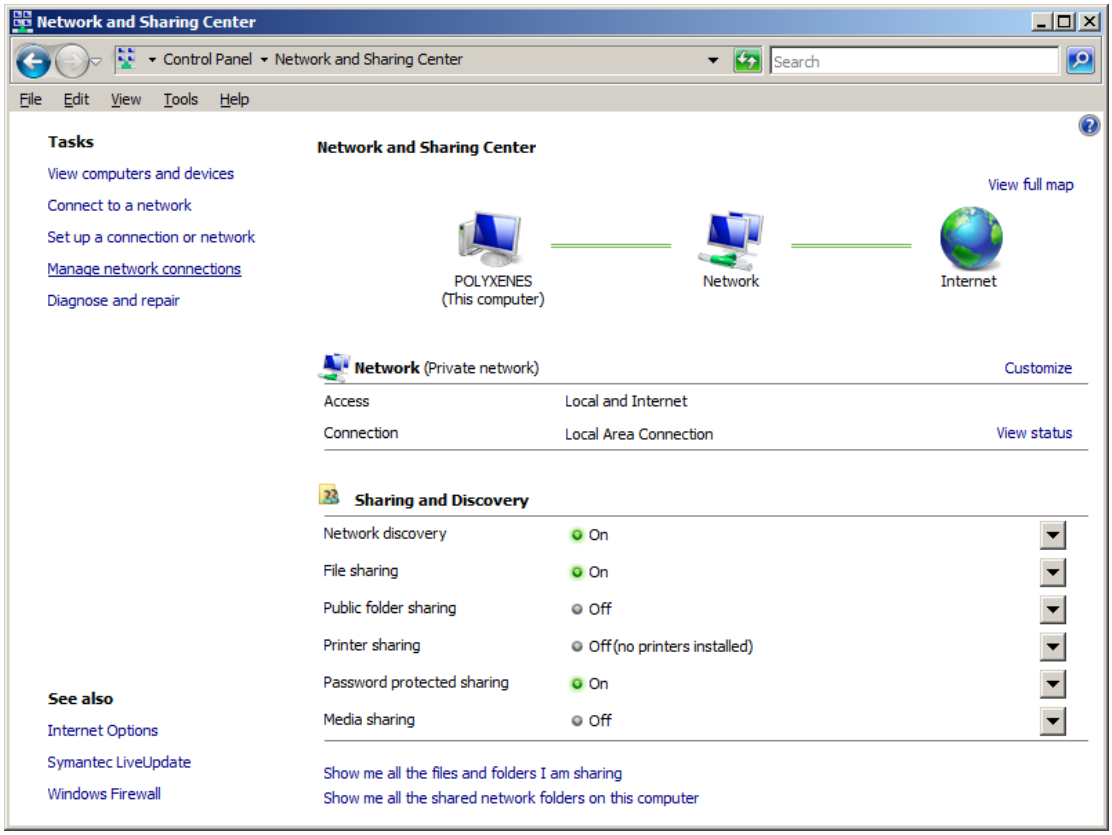


FIGURE – MICROSOFT WINDOWS VISTA NETWORK AND SHARING CENTER

On the left-hand side of the Network and Sharing Center window, a list of links enumerates the various functions of the Microsoft Vista Network and Sharing Center. Find the link labeled “Manage Network Connections,” and click on it.

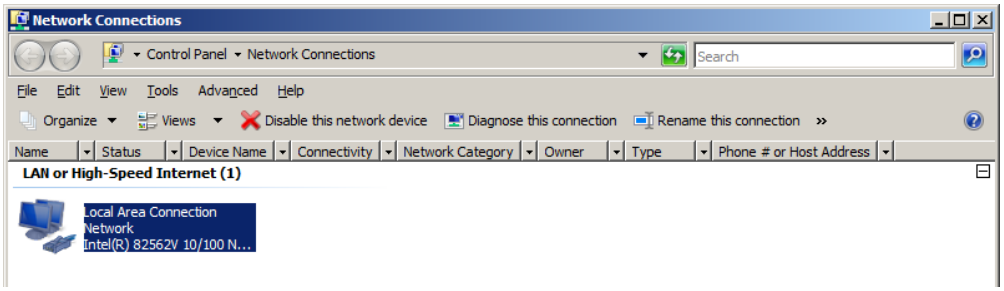
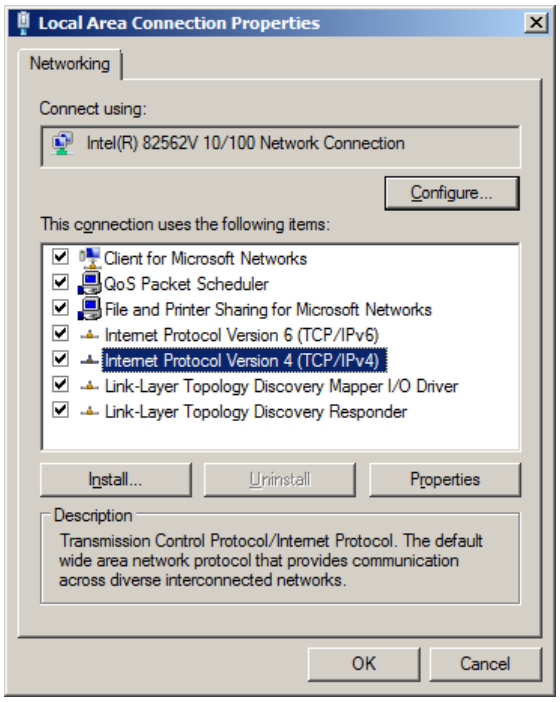
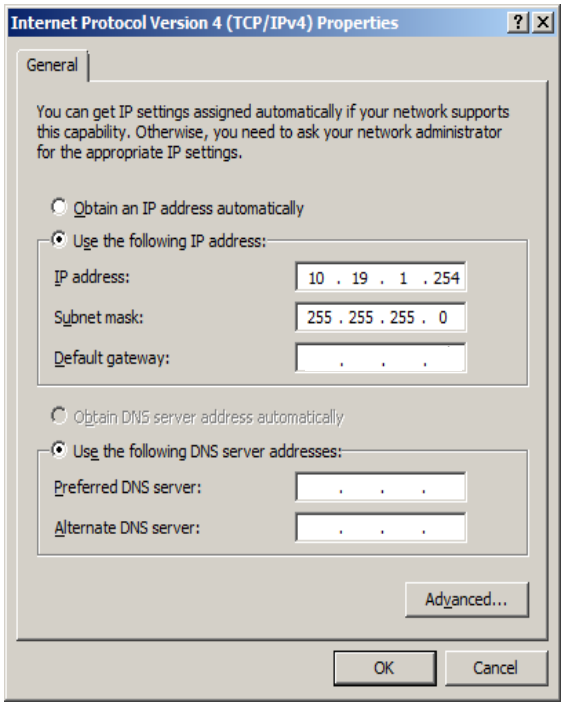

Network Connections
Control Panel ▸ Network Connections
Search
File Edit View Tools Advanced Help
Organize Views Disable this network device Diagnose this connection Rename this connection
Name Status Device Name Connectivity Network Category Owner Type Phone # or Host Address
LAN or High-Speed Internet (1)
Local Area Connection
Network
Intel(R) 82562V 10/100 N...

FIGURE 24 – “MANAGE NETWORK CONNECTIONS” SCREEN

On this screen, a connection entitled “Local Area Connection” (or some variant) will appear. Right-click the “Local Area Connection” icon and select the “Properties” option from the resulting context menu.


Local Area Connection Properties
Networking
Connect using:
Intel(R) 82562V 10/100 Network Connection
Configure...
This connection uses the following items:
Client for Microsoft Networks
QoS Packet Scheduler
File and Printer Sharing for Microsoft Networks
Internet Protocol Version 6 (TCP/IPv6)
Internet Protocol Version 4 (TCP/IPv4)
Link-Layer Topology Discovery Mapper I/O Driver
Link-Layer Topology Discovery Responder
Install... Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
OK Cancel

STEP 1 – FIND “INTERNET PROTOCOL VERSION 4,” HIGHLIGHT IT AND CLICK ON “PROPERTIES”


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 10 . 19 . 1 . 254
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK Cancel

STEP 2 – SELECT “USE THE FOLLOWING IP ADDRESS” AND CLICK “OK” TO EXIT AND SAVE.

After clicking “OK” in the “Local Area Connection Properties” window, the IP (Internet Protocol) address of the computer being used to connect to the IPICO Sports Elite Reader has been changed.

6.2 WEBMIN

Webmin is an internal configuration tool that provides basic and advanced reader configuration utilities and options. To access the Webmin tool, open an Internet browser (Internet Explorer, Firefox) and begin a new session. In the address bar of the open web browsing session, type the IP Address of the reader to which connection is desired and then a colon (":"), followed by the port number 10042. For example, the Webmin tool located on a reader with the address of 10.19.1.101 would be accessed by entering "10.19.1.101:10042" in the "Address" bar.

FIGURE – WEBMIN LOGIN SCREEN

The above-pictured screen will appear when the Webmin is accessed. The user name and password used to login to the Webmin tool is case-sensitive, and needs to be input as follows:

Username: iPadmin
Password: Fox1Bat

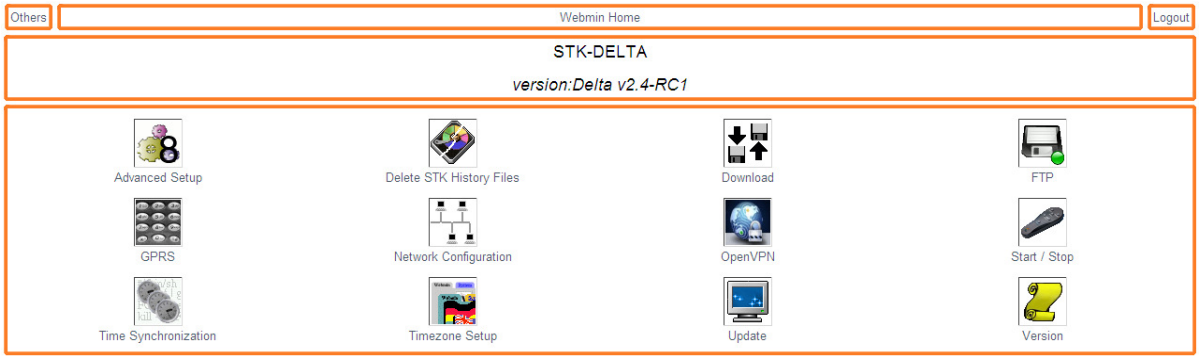


FIGURE – WEBMIN MAIN INTERFACE SCREEN

Once the login process has been completed, the above-pictured screen will appear

WEBMIN ICONS

Advanced Setup

Allows for the settings changes for the Delta shutdown grace period (default 120 seconds) and for the reader's FS-LS timeout.

Delete STK History Files

Provides an interface by which the reader's stored data files can be disposed.

Download

Allows for download of reader history and maintenance log files through SCP; **use of FTP is advocated**. May be removed, forthcoming.

FTP

This interface provides a link to the reader's FTP.

GPRS

Displays and changes values relevant to a user's GPRS modem settings.

Network Configuration

Allows for the reader's networking settings (IP, DHCP client or server status, et al.) to be altered.

OpenVPN

Sets and saves OpenVPN access parameters.

Start / Stop

Provides users with start/stop and restart control of the reader's Delta module (diagram #4).

System Time

Allows for the reader's system time to be changed.

Time Synchronization

Provides access to the reader's NTP (Network Time Protocol) settings forNTP server status for time sync.

Timezone Setup

Allows for reader's system time zone to be changed.

Upgrade

Provides an interface for upgrading the operating system version for the reader.

Version

Reports the current operating process versions.

FIGURE – DIAGRAM OF WEBMIN ICONS AND FUNCTIONS

6.2.1 ADVANCED SETUP

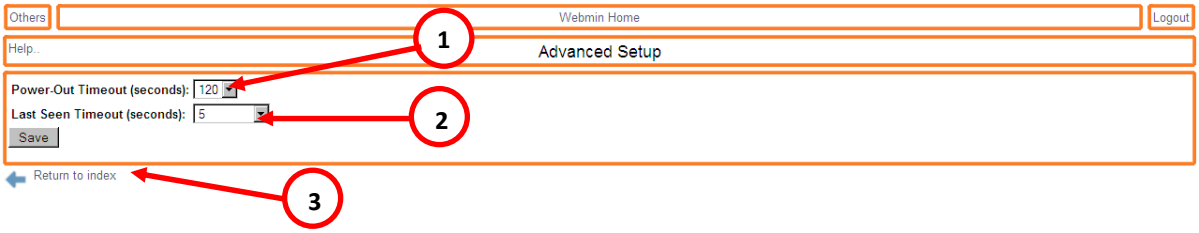


FIGURE – ADVANCED SETUP SCREEN

1. *Power-Out Timeout*

The setting of this value determines the amount of time that the Delta will use to shut down its processes after the reader unit has been turned off by rotary switch (Fig. 1, 9). The Delta of the reader unit will remain on during this timeout, and shut down only when the set time for time-out is reached. The default value is 120 seconds. To save any changes made to this setting, click the "Save" button located in the lower left-hand corner of the screen.

2. *Last Seen Timeout*

The *Last Seen Timeout* setting determines the amount of time between each "First Seen" and "Last Seen" read on reader port 10200 (the First-Seen,Last-Seen port). The default value is 5 seconds. To save any changes made to this setting, click the "Save" button located in the lower left-hand corner of the screen.

3. *Return to Index Link*

Clicking on this link will return the user to the index screen of the Webmin application. If changes have not been saved, this link will return to the main screen without saving changes. To save any changes made to the values listed on the "Advanced Setup" screen, click the "Save" button located in the lower left-hand corner of the screen.

6.2.2 DELETE STK HISTORY FILES

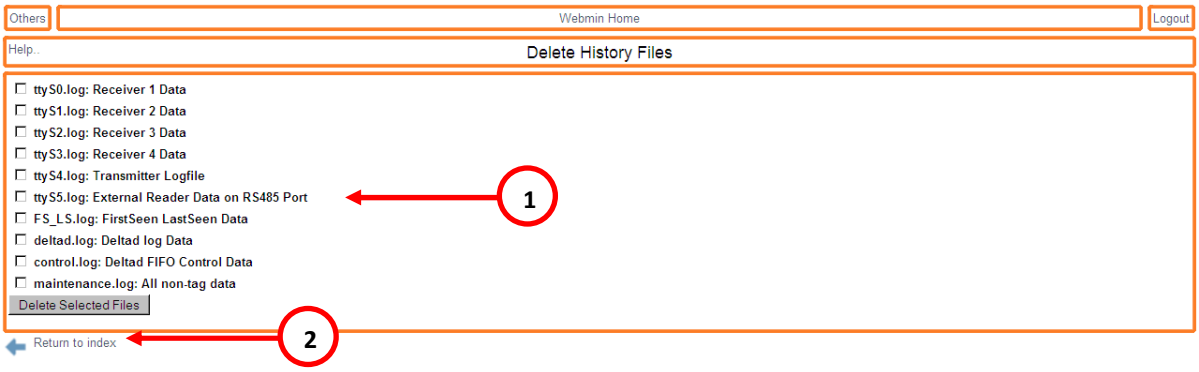


FIGURE – DELETE STK HISTORY FILES SCREEN

1. *File Deletion Checkboxes*

The files listed at the left-hand side of the "Delete STK History Files" screen are the files located on the reader that are available for deletion. To delete a file, check the box located to the left of the file name for which deletion is intended. Repeat this process for all files desired for deletion. Once finished selecting files, click on the "Delete Selected Files" button located in the lower left-hand corner of the screen.

2. Return to Index Link

Clicking on this link will return the user to the index screen of the Webmin application. If changes have not been saved, this link will return to the main screen without deleting any files. To delete the intended files listed on the "Delete STK History Files" screen, click the "Delete Selected Files" button located in the lower left-hand corner of the screen.

6.2.3 DOWNLOAD HISTORY FILES

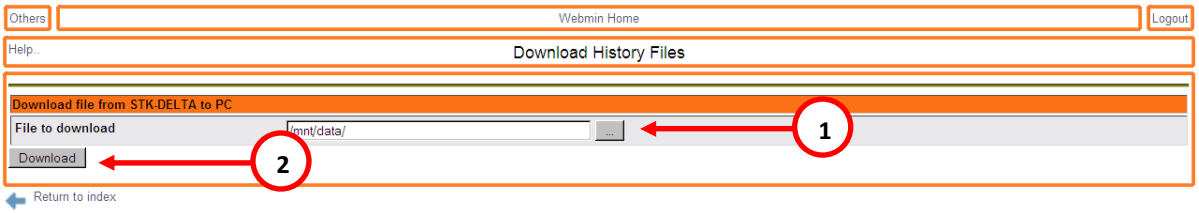


FIGURE – DOWNLOAD HISTORY FILES SCREEN

1. File to Download "…" button

Clicking on this button will launch an additional window (Figure 17) through which the user can select the file for which download is desired. This method uses SCP (Session Control Protocol) and is slower than the use of the FTP (File Transfer Protocol) method used by the Elite Reader. This feature is included for backwards compatibility with previous operating system versions. This feature may be removed in forthcoming versions.

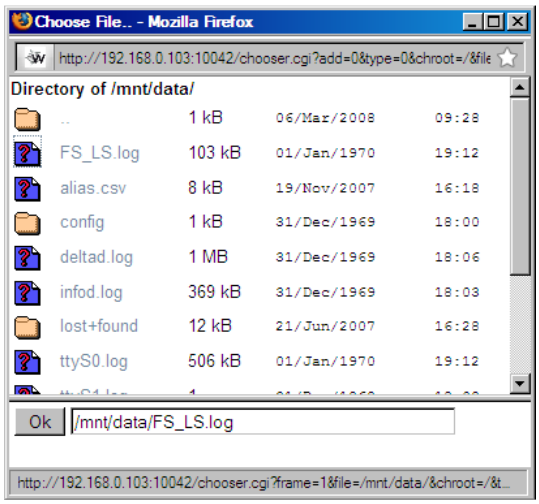


FIGURE – "CHOOSE FILE" DIALOG

To select a file to download, simply click on the icon located to the left of the item desired. This will add the file to the text field to the right of the "OK" button. Once the desired file has been selected, click the "OK" button, the user will return to the main "Download History Files" screen (Figure 16), and the "File to Download" field will be populated with the selected file. All reader files available for download are located in this repository.

2. "Download" button

Once the "File to Download" field has been populated according to the above-described manner, clicking this button will request the file from the reader for download.

6.2.4 DELTA FTP (FILE TRANSFER PROTOCOL)

FIGURE – DELTA FTP (FILE TRANSFER PROTOCOL) SCREEN

1. FTP (File Transfer Protocol) Link

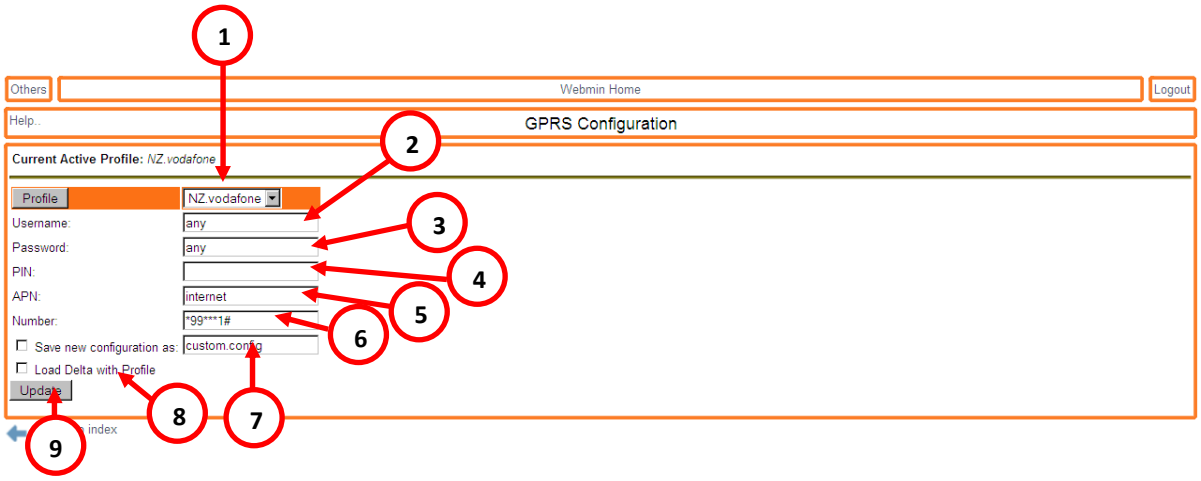
Clicking the link located on the "Delta FTP" screen will send the user to the FTP (File Transfer Protocol) archive located on the reader. All reader files available for download are located in this repository.

Index of ftp://10.19.1.101/
Up to higher level directory
Name Size Last Modified
FS_LS.log 32 KB 8/5/2008 1:30:00 AM
alias.csv 9 KB 11/19/2007 12:00:00 AM
config 1/21/1970 12:00:00 AM
deltad.log 368 KB 8/5/2008 1:37:00 AM
lost+found 10/10/2007 12:00:00 AM
maintenance.log 254 KB 8/5/2008 1:38:00 AM
ttyS0.log 115 KB 8/5/2008 1:30:00 AM
ttyS1.log 31 KB 8/5/2008 1:30:00 AM
ttyS2.log 7/31/2008 4:45:00 AM
ttyS3.log 7/31/2008 4:45:00 AM
ttyS4.log 5 KB 8/5/2008 1:37:00 AM
ttyS5.log 5 KB 8/5/2008 1:37:00 AM
var 10/10/2007 12:00:00 AM

FIGURE – ELITE READER FTP (FILE TRANSFER PROTOCOL) SCREEN

The above-pictured screen (Figure 19) lists all files and directories available for download from the reader. To save a given file, right-click on the file for which download is desired and select the "Save Target As..," "Save Link As.." options, or a variation thereof. These options and the above-pictured screen may appear different depending on the Internet browser in use with the IPICO Sports Elite Reader.

6.2.5 GPRS (GENERAL PACKET RADIO SERVICE)



1. *Carrier Profile*

The IPICO Sports Elite Reader supports the following G.P.R.S. (General Packet Radio Service) providers:

A1	(Austria)
Aon	(Austria)
Orange	(France)
Vodafone	(New Zealand)
AT&T	(United States)

Use this drill-down menu to select your G.P.R.S. (General Packet Radio Service) provider.

2. *Username*

Depending upon the preferences of your chosen carrier, you may be required to provide a network username in order to use your G.P.R.S. (General Packet Radio Service) subscription. Please verify all necessary network details with your service provider.

3. *Password*

Depending upon the preferences of your chosen carrier, you may be required to provide a network password in order to use your G.P.R.S. (General Packet Radio Service) subscription. Please verify all necessary network details with your service provider.

4. *P.I.N. (Personal Identification Number)*

Depending upon the preferences of your chosen carrier, you may be required to provide a network access P.I.N. (personal identification number) in order to use your G.P.R.S. (General Packet Radio Service) subscription. Please verify all necessary network details with your service provider.

5. *A.P.N. (Access Point Name)*

Depending upon the preferences of your chosen carrier, you may be required to provide a network A.P.N. (access point name) in order to use your G.P.R.S. (General Packet Radio Service) subscription. Please verify all necessary network details with your service provider.

6. *Number*

Depending upon the preferences of your chosen carrier, you may be required to provide a specific network number in order to use your G.P.R.S. (General Packet Radio Service) subscription. Please verify all necessary network details with your service provider.

7. *Custom Configuration Settings*

If any of the above settings have been customized in order to operate your G.P.R.S. (General Packet Radio Service) device, it is recommended that you save these details. Checking the checkbox to the right will save details to the name listed in the text box at right when “Save” is clicked.

8. "Load Delta with Profile" Option

Once the correct carrier profile data has been entered or selected, checking the "Load Delta with Profile" box will immediately load the profile onto the Delta module, enabling the G.P.R.S. (General Packet Radio Service) device to be used with your chosen network details.

9. "Save" button

Clicking the "Save" button will store all and put into place all network details chosen.

6.2.6 NETWORK CONFIGURATION

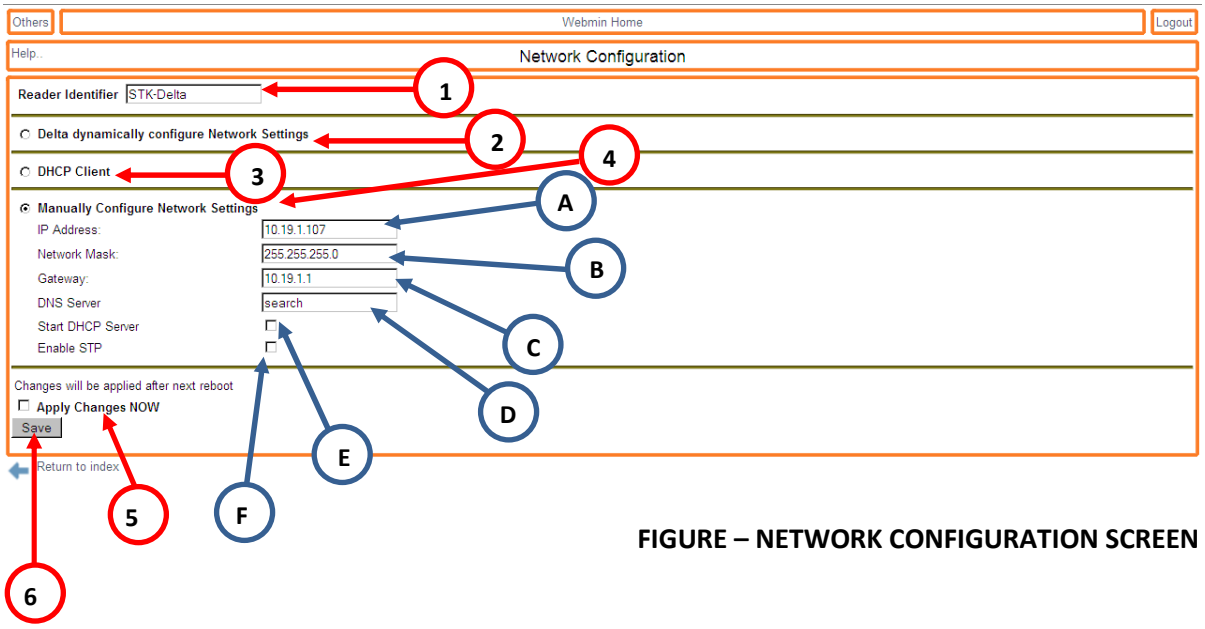


FIGURE – NETWORK CONFIGURATION SCREEN

1. Reader Identifier Field

The setting occupying this field designates a physical name for the given Elite Reader Unit. **NOTE: WHILE ANY NAME CAN BE GIVEN TO A READER, THE SETTING IN THIS FIELD MUST NOT CONTAIN ANY SPACES.**

2. Dynamic Network Settings Option

This option allows a host network to assign the Elite Reader network settings. For this setting to successfully work, the reader must be connected to a network where a DHCP (Dynamic Host Configuration Protocol) server is in operation. This option is meant for use if there is a known DHCP (Dynamic Host Configuration Protocol) server resident on the network. If no server of this type is found, and the "Start DHCP Server" checkbox (Figure 20, item 4.a) is checked, the reader will automatically become a DHCP (Dynamic Host Configuration Protocol) server if none is found.

3. DHCP (Dynamic Host Configuration Protocol) Client Option

Similar to the Dynamic Network Settings Option discussed above, this option allows for the dynamic configuration of the reader's network settings according to DHCP (Dynamic Host Configuration Protocol). However, this option should be used when there is a DHCP (Dynamic Host Configuration Protocol) server on the network, but its address or location is unknown, as the reader will scan the network for this server and attempt to use it to obtain an address.

4. Manually-Configured Network Settings Option

Using this option allows the user to manually configure the reader's network options. Using this feature will establish a "static" (constant) reader network address.

a. IP (Internet Protocol) Address Field

This field defines the Elite Reader unit's IP (Internet Protocol) address. This address refers to the network location of the reader and is the address at which the user will access the reader. When modifying this setting, ensure that the address is unique (not repeated on another reader or device that currently resides on the network).

b. Network Mask Field

The Network Mask setting for IPICO Sports Elite Readers is set to 255.255.255.0 by default. This setting is assigned before shipping the reader and should not be modified except by users with advanced networking experience or direction from a user with advanced networking experience.

c. Gateway Field

The value listed in this field is that of a network gateway, typically a router or a server machine. The default value of this setting is 10.19.1.1, unless the reader's IP (Internet Protocol) address has been requested to be different or has been changed by another user. For most networks, the gateway is an IP (Internet Protocol) whose last two octets are "1.1," however this may be different depending on network or computer settings. It is recommended that this value be changed only by those users with advanced networking knowledge.

d. DNS (Domain Name Server) Server Field

"Search" is set as the default setting for this field. When populated, this field should contain the address of a DNS (Domain Name Server) server. This setting only applies to those networks which have domain names, and typically basic or intermediate race timing networks do not contain a DNS. It is recommended that this value be changed only by those users with advanced networking knowledge.

e. Start DHCP (Dynamic Host Configuration Protocol) Server Option

Enabling this option will cause reader to become an independent DHCP (Dynamic Host Configuration Protocol) server. When enabled, the reader will serve addresses to all resident network devices starting from the lowest open address up to ten (10) addresses below the reader IP (Internet Protocol) address and ten (10) addresses above the reader's own address. For example, a reader addressed at 10.19.1.101 would issue addresses 10.19.1.1 to 10.19.1.91 and then 10.19.1.111 to 10.19.1.255.

f. Enable STP (Spanning Tree Protocol)

The IPICO Sports Elite Reader allows for communication through the Spanning Tree Protocol (802.1d and 802.1w protocols). Checking this box will enable the reader to handle network requests consistent with these protocols. STP (Spanning Tree Protocol) may be resident on networks that contain routing and certain other switching equipment. Consult all network equipment to be used in tandem with the IPICO Sports Elite Reader and determine the proper setting for this option. By default, this option is unchecked.

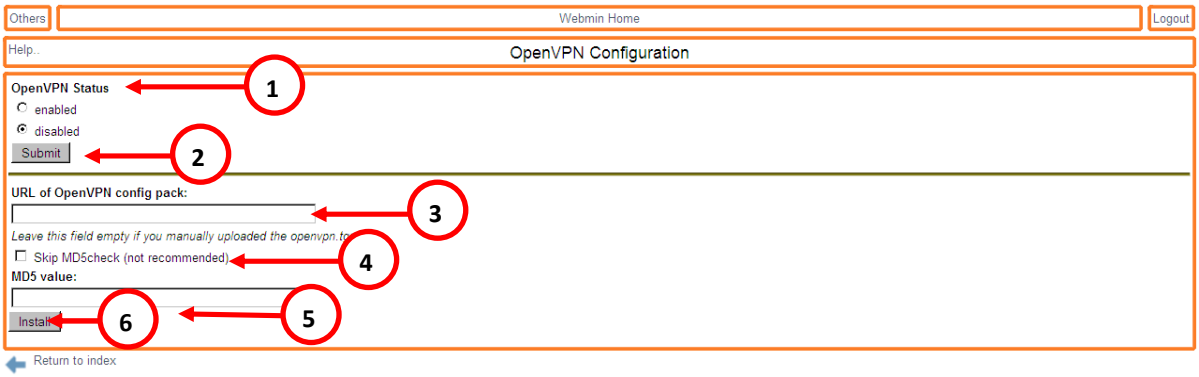
5. "Apply Changes Now" Option

Changes to the IPICO Sports Elite Reader network settings normally require a restart of the reader in order to properly configure these changes. However, checking the "Apply Changes Now" checkbox will prompt the reader to apply the changes made immediately after clicking the "Save" button. This process can take up to two (2) minutes depending on the changes made.

6. "Save" button

Clicking on this button will save the changes made to all options listed and pictured above. By default, unless the "Apply Changes Now" (Figure 20, item 5) checkbox is enabled, the changes will be made the next time the IPICO Sports Elite Reader starts.

6.2.7 OPENVPN CONFIGURATION



1. *OpenVPN (Virtual Private Network) Status*

The two radio buttons, labeled "enabled" and "disabled," control the operating status of the Elite Reader's OpenVPN (Virtual Private Network) services. To start services, click the "enabled" radio button, and click the "Submit" button (Diagram #2) to enact this change. To disable services, click the "disabled" button to end OpenVPN (Virtual Private Network) services.

2. *"Submit" button*

To enact the changes specified in the description of diagram #1, click the "Submit" button.

3. *"URL of OpenVPN config. pack" option*

In order to use the IPICO Sports OpenVPN (Virtual Private Network) server, a URL for a configuration packet must be obtained from IPICO Sports, and can be claimed by contacting technical/customer support.

4. *"Skip MD5check" option*

All client configuration packages will come with an "MD5" (Message diagram algorithm 5) checksum, a mathematic summation of all the package's contents used for verification purposes. If the "MD5" (Message diagram algorithm 5) check fails, the package will not install. This is used for security and integrity verification purposes and is ***not*** recommended to be skipped.

5. *"Install" button*

Clicking the "Install" button will install the client package located at the provided URL (Universal Resource Locator) with the accompanying "MD5" (Message diagram algorithm 5) checksum.

6.2.8 START / STOP

FIGURE – START / STOP SCREEN
*STK – SPORTS TIME KEEPING

1. *Stop STK-DELTA Option*

Selecting this option and clicking the "Execute" button (Figure 21, item 4) will cause the Delta module of the IPICO Sports Elite Reader to stop all of its processes while remaining on.

2. *Start STK-DELTA Option*

Selecting this option and clicking the "Execute" button (Figure 21, item 4) will restart all of the functions of the Delta module.

3. Power Off Option

Selecting the "Power Off" option and clicking the "Execute" button (Figure 21, item 4) will remove power from the Delta module and stop all of its functions accordingly. When power is removed from the Delta module, the only way to restart it is to turn the "On / Off" rotary switch (Figure 1, item 9) to the left, or "Off" position and then turn it back to the right, or "On" position.

4. Execute button

Clicking this button will enact the option selected. By default the "Stop STK-Delta" option is selected.

6.2.9 SYSTEM TIME

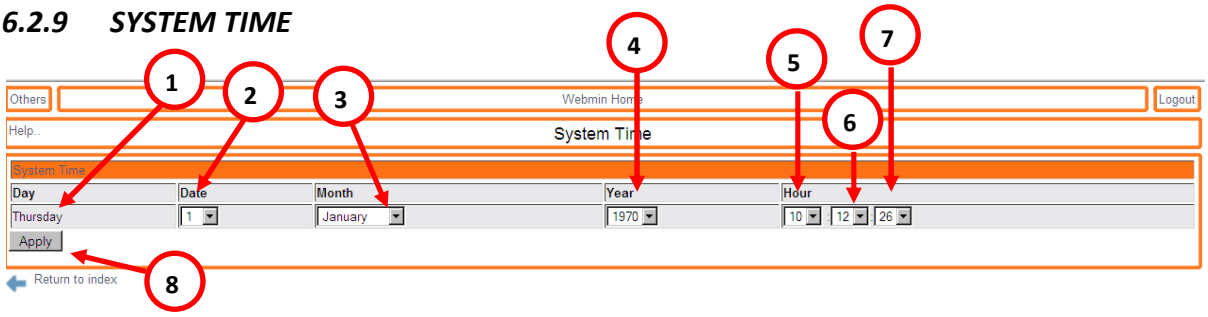


FIGURE – SYSTEM TIME SCREEN

1. Day of the Week

In the field immediately below the "Day" column header, the IPICO Sports Elite Reader will display the day of the week according to the date to which the reader is currently set. This is calculated by the reader and is not necessary for the user to set.

2. Date Selection

Beneath the "Date" column header, the drill-down menu displayed contains the numeric series one (1) through thirty-one (31). The user should select the current day from this numeric list.

3. Month Selection

The "Month" drill-down menu contains each of the twelve (12) months of the year in a list. The user should select the correct, current month from this list.

4. Year Selection

This drill-down contains a numeric list of years from which the user should choose the correct year.

5. Hour Selection

This drill-down corresponds to the hour of the day to which the user would like to set the reader and, thus contains the twenty-four (24) hours of the day. The user should select the current hour from the list.

6. Minute Selection

The "Minute" drill-down contains sixty (60) entries, corresponding to the number of minutes in the current hour. The user should select the correct, current minute value from the list.

7. Second Selection

The "Second" drill-down likewise contains sixty (60) entries, corresponding to the number of seconds in the current minute. The user should select the correct, current second value from the list.

8. "Apply" button

Clicking this button will apply all of the selections made by the user. Due to network latency, the time applied to the reader may be up to five (5) seconds behind the actual real-world time.

6.2.10 TIME SYNCHRONIZATION

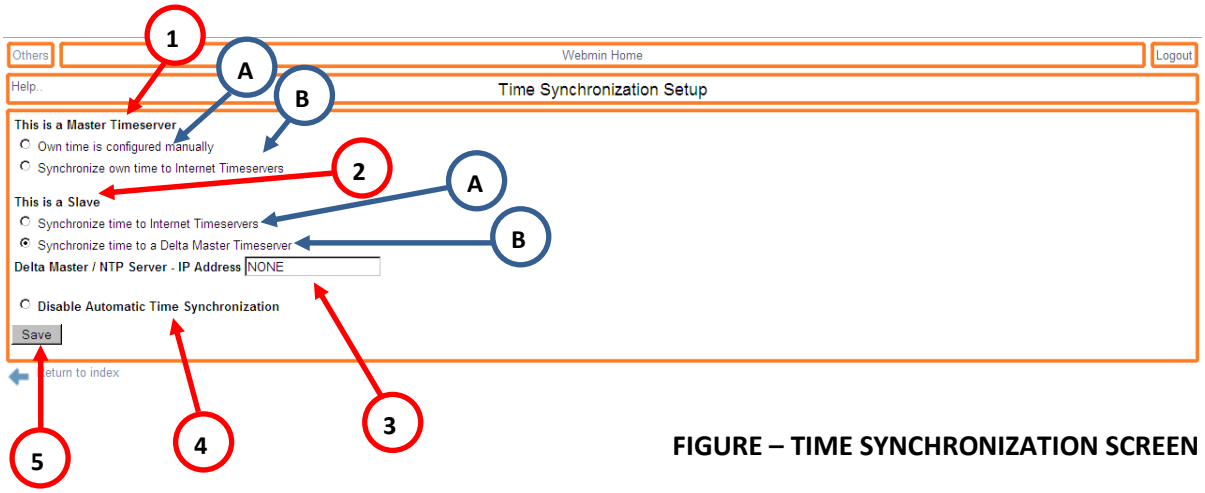


FIGURE – TIME SYNCHRONIZATION SCREEN

1. *Master Time Server Section ("This is a Master Timeserver")*

All settings listed under this section imply that the IPICO Sports Elite Reader for which these settings are being configured is a ***master*** time server. As a master time server, the IPICO Sports Elite Reader will act as a common time source for all readers on the network if their settings are set to be ***slave*** settings.

a. Own Time is Configured Manually Option

Selecting this option will cause the IPICO Sports Elite Reader to refer to its current internal time as the time source by which all slave readers will be synchronized.

b. Synchronize Own Time to Internet Timeservers

Selecting this option will cause the IPICO Sports Elite Reader to attempt to access a list of Internet time servers in order to set its internal time such that the new time will serve as the common time source amongst all slave readers. **NOTE: TO USE THIS FEATURE, THE IPICO SPORTS ELITE READER MUST HAVE ACCESS TO AN INTERNET CONNECTION.**

2. *Slave Time Server Section ("This is a Slave")*

All settings listed under this section imply that the IPICO Sports Elite Reader for which these settings are being configured is a ***slave*** reader. As a slave reader, the IPICO Sports Elite Reader will acquire a time from a time source that is acting as a master time server.

a. Synchronize Time to Internet Timeservers

Selecting this option will cause the reader to refer to a list of Internet time servers in order to set its internal time. The time acquired through this method by the IPICO Sports Elite Reader will not be broadcast to other readers, as this setting configures the reader as a slave machine. **NOTE: TO USE THIS FEATURE, THE IPICO SPORTS ELITE READER MUST HAVE ACCESS TO AN INTERNET CONNECTION.**

b. Synchronize Time To a Delta Master Timeserver

If an IPICO Sports Elite Reader resident on the network is a master time server, this setting will allow this IPICO Sports Elite Reader to reference the reader set up as the master time server as its time source. **NOTE: TO USE THIS FEATURE, AN IPICO SPORTS ELITE READER MUST BE SET UP AS A MASTER TIME SERVER AND BE RESIDENT ON THE SAME NETWORK AS THE READER SET TO BE A SLAVE.**

3. *Delta Master / NTP (Network Time Protocol) Server – IP (Internet Protocol) Address Field*

When a Delta has been set as a master time server, the user should input the IP (Internet Protocol) address of the master time server Delta into this field. This will allow the slave readers to use the

master time serving Delta as their time source. Likewise, if there is an Internet time server whose use is desired, input the IP (Internet Protocol) address of the desired time server into the field. This will cause the reader to refer to the listed time server for its internal time.

4. Disable Automatic Time Synchronization Option

If automatic time synchronization is not desired, a user may disable the feature completely by selecting this option. This will cause the reader to ignore all time synchronization settings, and will instruct the IPICO Sports Elite Reader to use its own internal time independent of any other systems.

5. "Save" button

Clicking on this button saves all changes made to the time synchronization settings.

6.2.11 TIME ZONE SETUP

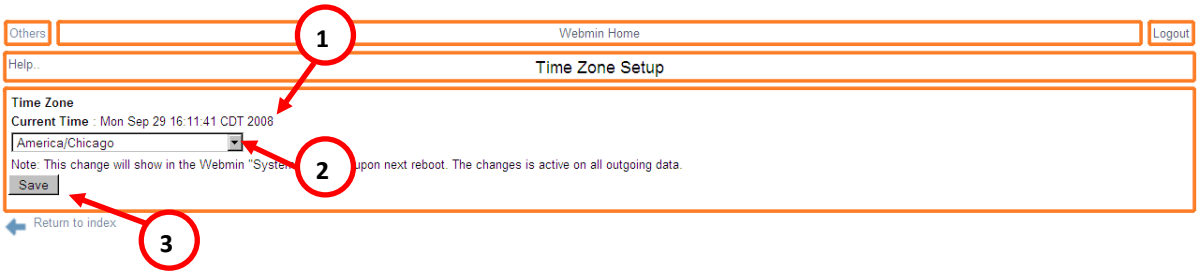


FIGURE – TIME ZONE SETUP SCREEN

1. Current Time

This portion of the screen displays the reader's current internal time in full format, including the current time zone to which the reader is set.

2. Time Zone Selection

The Time Zone Selection drill-down menu contains a list of standard time zones in the format of "Continent/(City/Country)." The user should select the correct pairing (or the closest geographical pairing) that will set the reader to the desired time zone.

3. "Save" button

Clicking on this button will save and implement the settings change.

6.2.12 UPGRADE

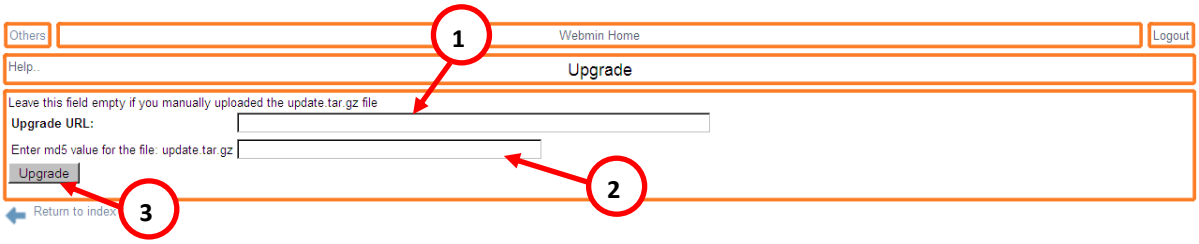


FIGURE – UPGRADE SCREEN

1. Upgrade URL (Universal Resource Locator) Field

The Upgrade URL (Universal Resource Locator) Field accepts the FTP (File Transfer Protocol) location of IPICO Sports Elite Reader operating system tarball (.tar.gz / .tar) files. These files can be provided to the end user upon request.

2. Md5 (Message-Digest Algorithm 5) Checksum Field

To ensure the security and the integrity of the operating system file selected, the IPICO Sports Elite Reader upgrade process requires a secure analysis key (checksum) that corresponds to each

individual operating system version file. When operating system files are provided by IPICO Sports, the Md5 (Message-Digest Algorithm 5) checksum will accompany the provision of the file.

3. "Upgrade" Button

When the upgrade information is correctly entered, clicking the "Upgrade" button will prompt the reader to attempt to download the upgrade file listed in the Upgrade URL (Universal Resource Locator) Field and compare the internally-calculated Md5 (Message-Digest Algorithm 5) checksum with the value provided in the checksum field (Figure 24, item 2).

6.2.13 VERSION

FIGURE – VERSION SCREEN

1. Version Information

The Version screen of the IPICO Sports Elite Reader Webmin tool displays corresponding version numbers for the various components installed with the latest installed distribution version of the IPICO Sports Elite Reader operating software. The current distribution version (pictured) will list the following values as version identification parameters:

Distribution Version: Delta v2.4
Webmin Version: Version 73
Deltad Version: Deltad, revision 592:595M
FSLSd Version:

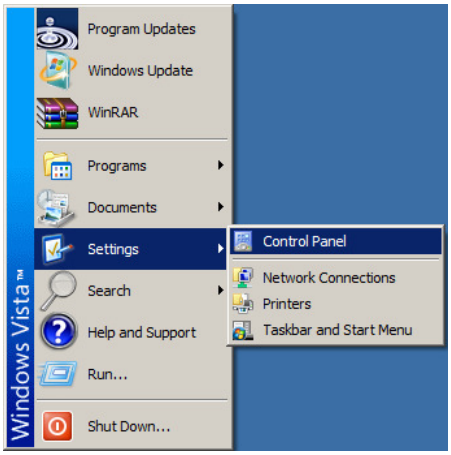
6.3 TELNET

NOTE: Telnet is a program that is provided with all versions of Microsoft Windows up to Windows XP. In the Windows Vista environment, Telnet is not a native component, but it can be downloaded as an optional service addition. The download process is covered below. Alternatively, other Telnet clients can be used in conjunction with the IPICO Sports Elite Reader, but only can be supported on a case-by-case basis.

6.3.1 INSTALLING MICROSOFT TELNET (MICROSOFT WINDOWS VISTA)

Microsoft Telnet is a program that allows for direct visual streaming of data over an Ethernet (TCP) connection. **It is not necessary for operation of the IPICO Sports Elite Reader, but is recommended for troubleshooting purposes.** The Microsoft Telnet program is not an integrated part of Microsoft Windows Vista, but can be added on as a service, free of charge. Following the steps listed and pictured below will install Microsoft Telnet on a Microsoft Windows Vista machine.

WINDOWS VISTA *CLASSIC*



WINDOWS VISTA *AERO*

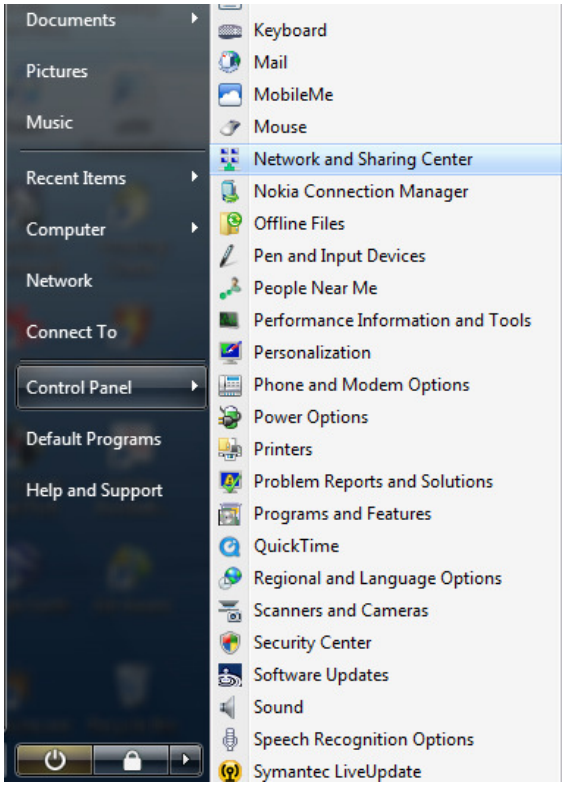


FIGURE – WINDOWS VISTA START MENU NAVIGATION

Navigate to the option entitled "Programs and Features" in the Windows Vista *Aero* menu or, if using the Windows Vista *Classic* format, select the "Programs and Features" item from the resulting "Control Panel" window.

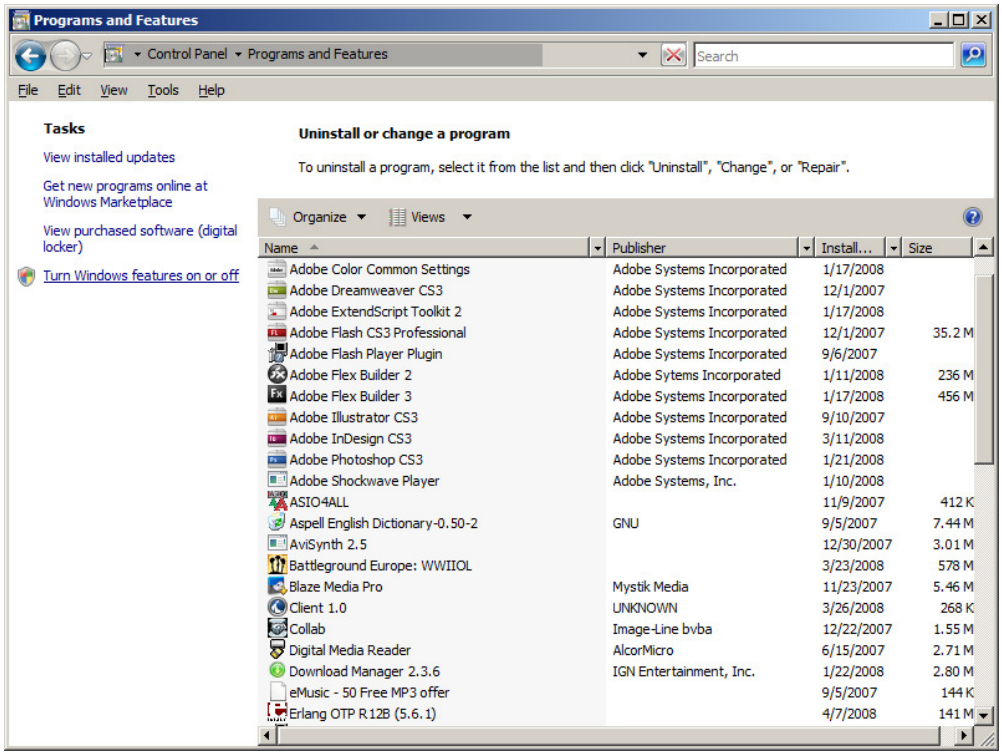

Programs and Features
Control Panel ▸ Programs and Features
Search
File Edit View Tools Help
Tasks
View installed updates
Get new programs online at Windows Marketplace
View purchased software (digital locker)
Turn Windows features on or off
Uninstall or change a program
To uninstall a program, select it from the list and then click "Uninstall", "Change", or "Repair".
Organize
Views
Name
Publisher
Install...
Size
Adobe Color Common Settings Adobe Systems Incorporated 1/17/2008
Adobe Dreamweaver CS3 Adobe Systems Incorporated 12/1/2007
Adobe ExtendScript Toolkit 2 Adobe Systems Incorporated 1/17/2008
Adobe Flash CS3 Professional Adobe Systems Incorporated 12/1/2007 35.2 M
Adobe Flash Player Plugin Adobe Systems Incorporated 9/6/2007
Adobe Flex Builder 2 Adobe Sytems Incorporated 1/11/2008 236 M
Adobe Flex Builder 3 Adobe Systems Incorporated 1/17/2008 456 M
Adobe Illustrator CS3 Adobe Systems Incorporated 9/10/2007
Adobe InDesign CS3 Adobe Systems Incorporated 3/11/2008
Adobe Photoshop CS3 Adobe Systems Incorporated 1/21/2008
Adobe Shockwave Player Adobe Systems, Inc. 1/10/2008
ASIO4ALL 11/9/2007 412 K
Aspell English Dictionary-0.50-2 GNU 9/5/2007 7.44 M
AviSynth 2.5 12/30/2007 3.01 M
Battleground Europe: WWIIOL 3/23/2008 578 M
Blaze Media Pro Mystik Media 11/23/2007 5.46 M
Client 1.0 UNKNOWN 3/26/2008 268 K
Collab Image-Line bvba 12/22/2007 1.55 M
Digital Media Reader AlcorMicro 6/15/2007 2.71 M
Download Manager 2.3.6 IGN Entertainment, Inc. 1/22/2008 2.80 M
eMusic - 50 Free MP3 offer 9/5/2007 144 K
Erlang OTP R12B (5.6.1) 4/7/2008 141 M

FIGURE – WINDOWS VISTA "PROGRAMS AND FEATURES"

At the left-hand side of the window, locate the link entitled "Turn Windows Features On or Off." Click on this link to launch the Windows Vista feature editing window.

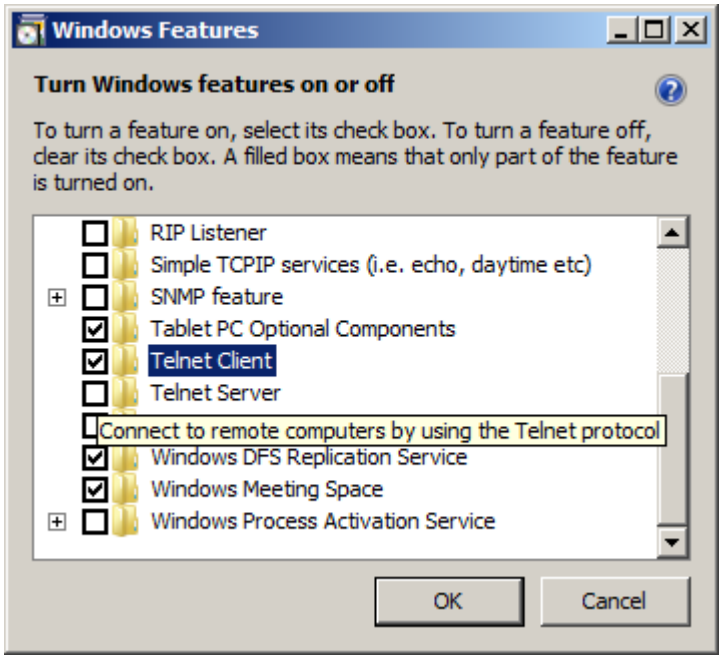

Windows Features
Turn Windows features on or off
To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.
RIP Listener
Simple TCPIP services (i.e. echo, daytime etc)
SNMP feature
Tablet PC Optional Components
Telnet Client
Telnet Server
Connect to remote computers by using the Telnet protocol
Windows DFS Replication Service
Windows Meeting Space
Windows Process Activation Service
OK
Cancel

FIGURE 40 – "WINDOWS FEATURES" EDITOR

As pictured above, locate the “Telnet Client” entry, click on the checkbox located to its left and click on the “OK” button to begin the installation of the Microsoft Telnet Client application.

6.3.2 RUNNING MICROSOFT TELNET (MICROSOFT WINDOWS XP AND VISTA)

To run Microsoft Telnet, navigate to the “Start” button, located in the lower left-hand corner of the Windows XP screen, on the taskbar, and click it, revealing the Windows XP Start Menu. Find and click on the “Run” option.

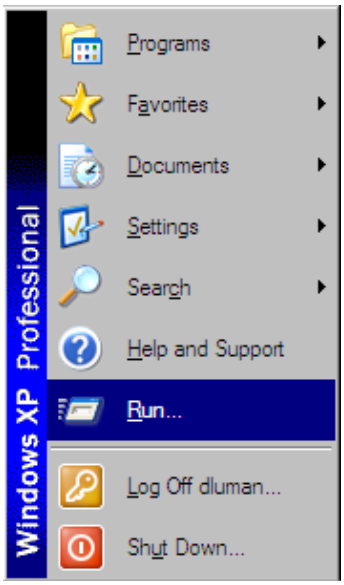


FIGURE – MICROSOFT WINDOWS XP START MENU

Clicking on the “Run” option will result in the appearance of the “Run” option’s screen, pictured below. Once the “Run” option screen appears, type the word “Telnet” into the field contained on the “Run” option screen.

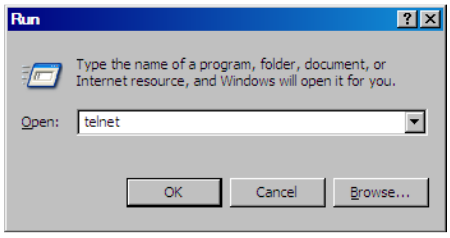


FIGURE 41 – “RUN” OPTION SCREEN

Once “Telnet” has been entered into the “Open:” Field, click the “OK” button. This will open the Microsoft Telnet window, pictured below.

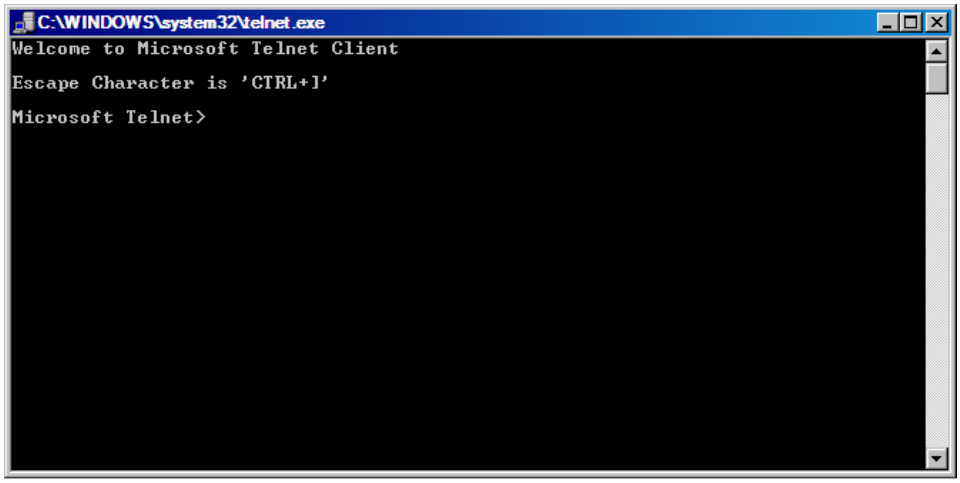
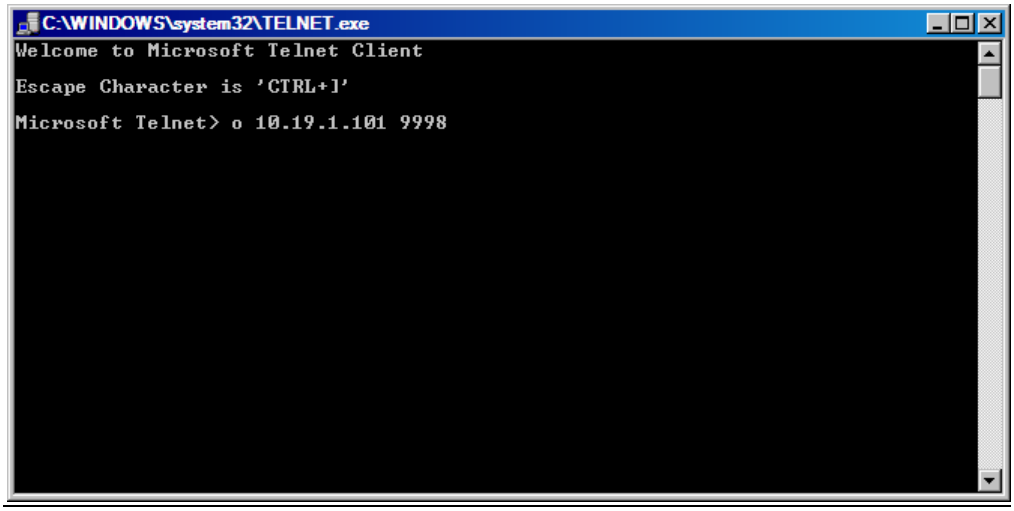


FIGURE – MICROSOFT TELNET WINDOW

6.3.2.(A) IPICO SPORTS ELITE READER MAINTENANCE ("9998") PORT

To access the reader through the Microsoft Telnet Application, ensure that the IPICO Sports Elite Reader is powered and that the Delta module is also powered, and has completed start-up. Once the IPICO Sports Elite Reader is ready for communication, connect to the reader from a computer using the orange "crossover" cable provided with the reader (or another compatible "crossover" cable). Once connected, type the following into the Microsoft Telnet window: "open" (followed by a space), the IP (Internet Protocol) address of the reader (labeled on the front panel of the Delta module) followed by another space, "9998". Once these parameters have been entered, the string entered into the Microsoft Telnet window should look like the following (using reader address 10.19.1.101 as an example):



The "9998" ("Maintenance") port displays maintenance records such as reader tuning reports and commands sent between the Delta module and other modules (i.e. the Receiver modules, et al.). This data is logged to the infod.log file resident on the CF (Compact Flash) card on the Delta module and can be downloaded via the reader's anonymous FTP (File Transfer Protocol) service.

```
Dec 22 15:44:46 STK-DELTA root: ,0,0,12.6,-25,96,1,-25,101,1,0,1,1^M
Dec 22 15:44:54 STK-DELTA root: ,0,1,12.4,-25,101,1,-25,106,1,0,1,1^M
Dec 22 15:45:04 STK-DELTA root: ,0,0,12.4,-25,96,1,-25,101,1,0,1,1^M
Dec 22 15:45:14 STK-DELTA root: ,0,0,12.8,-25,96,1,-25,101,1,0,1,1^M
Dec 22 15:45:09 STK-DELTA deltad[936]: Configuring  port /dev/ttyS0, stage 5
Dec 22 15:45:09 STK-DELTA deltad[936]: ab0109020812220115451731f1ee
Dec 22 15:45:11 STK-DELTA ntpdate[1112]: no server suitable for synchronization
found
Dec 22 15:45:12 STK-DELTA deltad[936]: Configuring  port /dev/ttyS0, stage 4
Dec 22 15:45:15 STK-DELTA deltad[936]: Configuring  port /dev/ttyS0, stage 4
Dec 22 15:45:15 STK-DELTA deltad[936]: ab01000122
Dec 22 15:45:16 STK-DELTA root: ,0,0,12.6,-25,96,1,-25,101,1,0,1,1^M
Dec 22 15:45:18 STK-DELTA deltad[936]: Configuring  port /dev/ttyS0, stage 3
Dec 22 15:45:18 STK-DELTA deltad[936]: ab01000425
Dec 22 15:45:21 STK-DELTA deltad[936]: Configuring  port /dev/ttyS0, stage 2
Dec 22 15:45:21 STK-DELTA deltad[936]: ab01001123
```

6.3.2.(B) IPICO SPORTS ELITE READER CONSOLE ("9999," CONTROL) PORT

The IPICO Sports Elite Reader "9999," or "Control" port, is a conduit for directly configuring reader settings via several commands (listed and explained below). To open the port, enter the string pictured in the following figure. It should look like the following (using reader address 10.19.1.101 as an example):

```
Welcome to Microsoft Telnet Client

Escape Character is 'CTRL+]'

Microsoft Telnet> open 10.19.1.101 9999_
```

FIGURE 42 – MICROSOFT TELNET WINDOW WITH INFORMATION ENTERED

Once connected, the cursor may move to the upper right-hand corner of the window, or the cursor may not move. Key the word "help" into the Microsoft Telnet window to cause the following command menu to display.

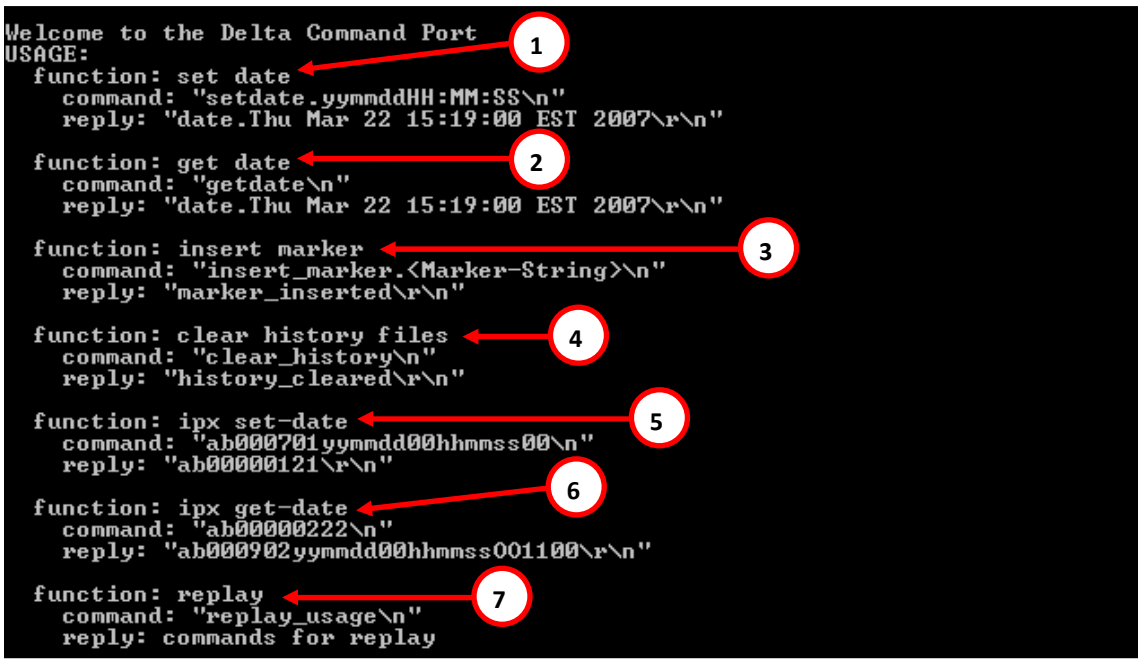


FIGURE 43 – TELNET CONTROL PORT HELP MENU

The port, “9999,” to which connection is being attempted is the Telnet reader settings and configuration port. As seen above, this port offers seven (7) features.

1. Set Date

The “9999” (Control) port allows the user to set the time using a formatted string that is detailed in the “command” line below the “function” heading. The format of the string is as follows:

setdate.yymmddHH:MM:SS

For example, to set the IPICO Sports Elite Reader clock to 3:30 PM on Wednesday, November 12, 2008, the string would be formatted as follows:

setdate.08111215:30:30

Once the correct string has been entered, simply pressing the “Enter” or “Return” keyboard key will send the command to the reader, prompting the reader to reply with

date.Wed Nov 12 15:30:30 [Time Zone Extension] 2008

```
setdate.08111215:30:30
date.Wed Nov 12 15:30:30 CST 2008
```

2. Get Date

The IPICO Sports Elite Reader also allows the user to retrieve the date through the control (“9999”) port. This is done by entering the “getdate” command, exactly as previously typed. Once “getdate” has been entered, and the “Enter” or “Return” keyboard key has been pressed, the reader will respond with the current, internal reader date and time as follows (assuming the date to be Wednesday, November 12, 2008 at 4:00 PM):

date.Wed Nov 12 16:00:00 [Time Zone Extension] 2008

```
getdate
date.Wed Nov 12 16:00:00 CST 2008
```

3. Insert Marker

The IPICO Sports Elite Reader “9999” (control) port also allows for a user to insert text (ASCII) markers into all timing record files. As an example, to insert a marker “New Race” into a file, the following string format would need to be typed into the console window:

insert_marker.New Race

With which the reader will be prompted to respond:

marker_inserted

```
insert_marker.New Race
marker_inserted
```

4. Clear History Files

The "9999" (control) port of the IPICO Sports Elite Reader also allows the user to perform a one-command complete clearing of the reader history files. This is done by entering the command:

clear_history

To which the reader will respond:

history_cleared

```
clear_history
history_cleared
```

5. IPX Set-Date

The "IPX Set-Date" command allows the user to set the date and time of the IPICO Sports Elite Reader through the IPICO IP-X protocol. This feature is available to the user, though it is recommended and reserved for programmatic use.

6. IPX Get-Date

The "IPX Get-Date" command allows a user to retrieve the reader's internal date and time using the IPICO IP-X protocol. Similar to the "IPX Set-Date" command, the "IPX Get-Date" command is intended and reserved for programmatic use.

7. Replay

The Replay feature of the IPICO Sports Elite Reader (Operating System version 2.3) allows tag record files to be "replayed" at various speeds and from various points within each of these files. To see the instructional commands for the "Replay" function, type "replay_usage" into the "9999" port window within Microsoft Telnet. The IPICO Sports Elite Reader will respond with the "Replay" syntax help file.

```
replay_usage


\Delta replay.pl version 2.0 usage:

Replay has 4 configurable options:
  1)file
        default: /mnt/data/ttyS0.log
        options: ttyS[0-3], fslsd, infod
        function: replay data from this file
  2)datetime
        default: all
        options: yymmddhhmmss
        function: replay data after this data&time
  3)speed
        default: 0
        options: 0=no delay, 1=recorded speed, [2-100]xfaster than recording
        function: control the playback speed
  4)port
        default: 10300
        options: ports >1024, excl Delta reserved ports [9998,9999,10000,10200,1
0201]
        function: specify the port on which replay will "play"
Action: START replay
  command: "replay_start[ <option>.<value>[ <option>.<value>[ ..]]]\n"
  - Any number of options can be specified in any order
  - Options and values are always coupled and seperated with a "."
  - <Option.Value> pairs are seperated from preceding pairs with a space
  - Omited options will assume their default values
  eg: Starting replay of ttyS1 on port 10500 for all data after the 7th May 2008
 at 12:30
        "replay_start file.ttyS1 port.10500 datetime.080507123000\n"
Action: STOP replay
  command: "replay_stop\n"
  NOTE: All instances of replay will be stopped
```

The list that results from typing in the command “replay_usage” explains the use of replay and all of its various functionalities. The elements of the “replay_start” function are as follows:

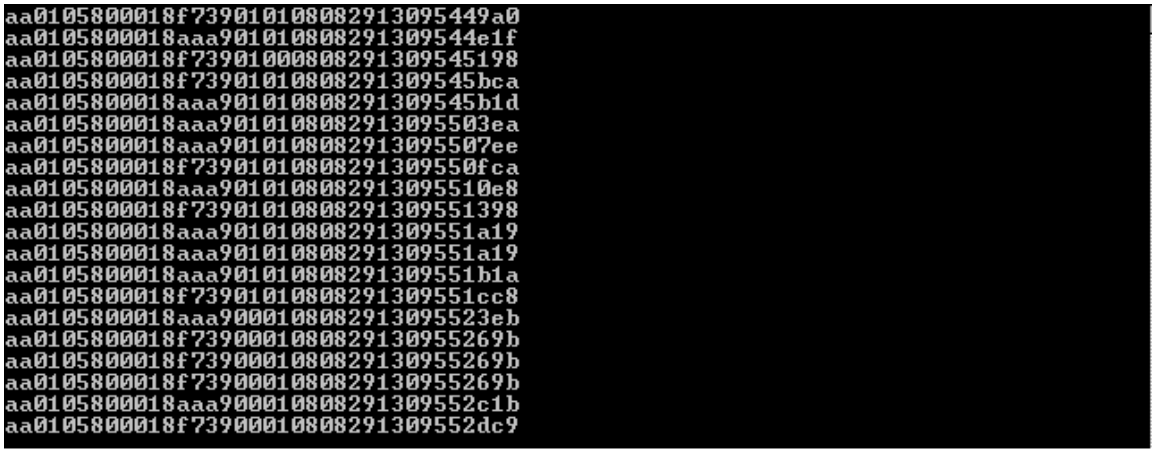
File	A selection of the file with which to start replay
DateTime	A selection of the date and time after which to start the replay
Speed	A setting through which the replay can be sped up or slowed down
Port	A configuration option specifying the port on which the replay will occur

The format of replay’s usage is then as follows if the file ttyS0.log is wished to be replayed after today (29 August, 2008) at 1:09 PM, on port 13000 at no delay:

replay_start file.ttyS0 port.13000 datetime.080829130900

Once the command typed is satisfactory, hit the “Enter” key to start the replay. The stream will then begin on port 13000. To view the stream, have a second Microsoft Telnet window open, and access the streaming port by typing (assuming example the IP [Internet Protocol] address to which connection is desired is still 10.19.1.101)

Once connected on the port, the replay stream will start. At “no delay” (the default “Speed” option), the reader will replay all data at a high speed. Adjust the given speed element (As listed in the “replay_usage” command) to suit different circumstances.



6.3.2.(C) IPICO SPORTS ELITE READER “10000” (RAW STREAMING) PORT

The IPICO Sports Elite Reader has options for three (3) other port connections specifically saved for the purpose of streaming separate data formats. The “10000,” or “Raw Streaming” port streams tag read records for every tag read successfully made by the IPICO Sports Elite Reader.

To connect to the streaming port, open a Microsoft Telnet session window (method prescribed in section 6.3.2) and type the word “open” followed by a space, then the IP (Internet Protocol) address of the reader followed by another space proceeded by the number “10000,” as pictured below:

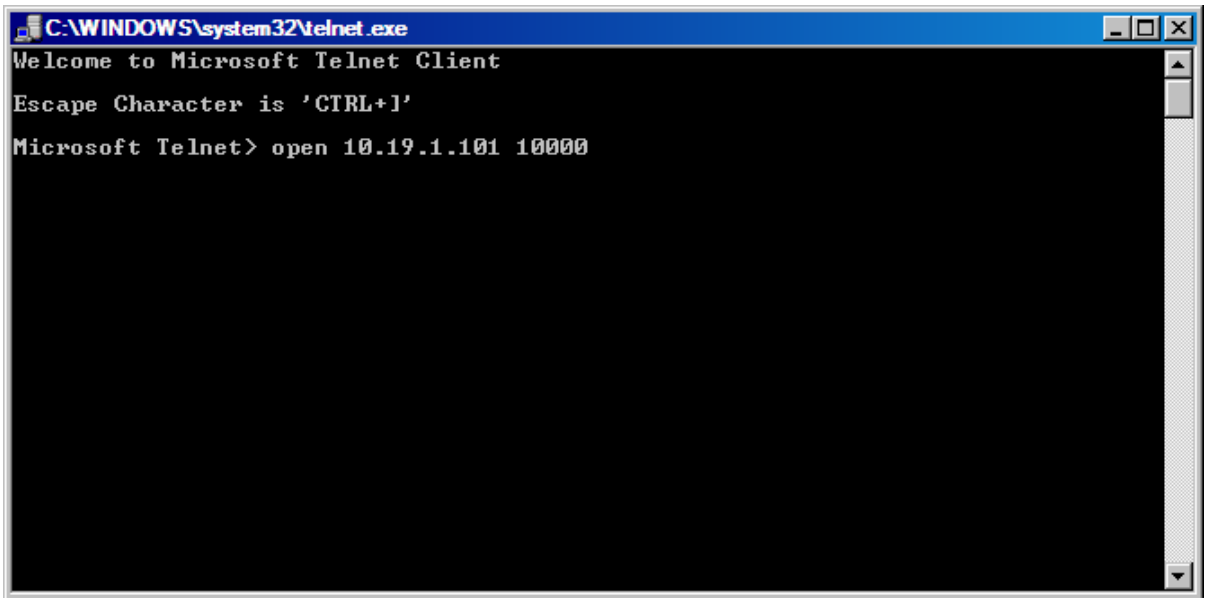


FIGURE – TELNET PORT "10000" SYNTAX

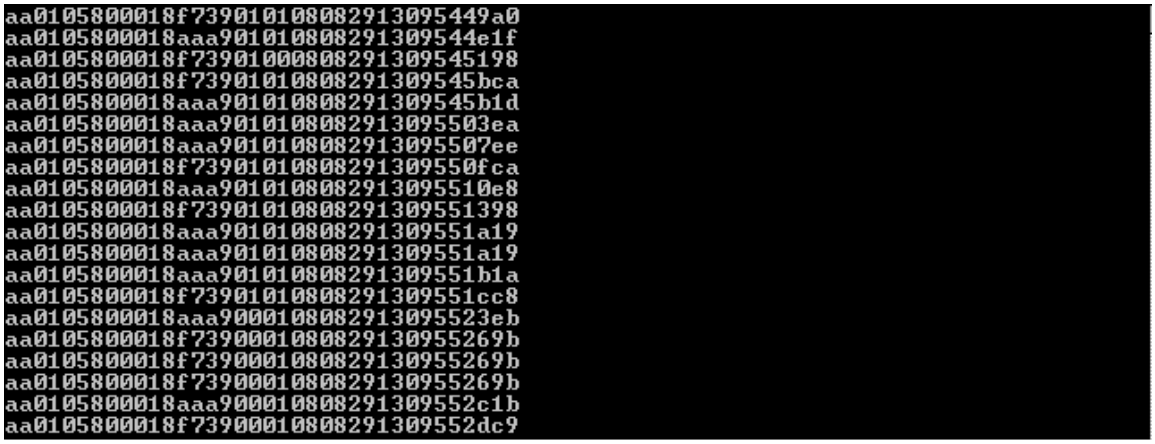


FIGURE 44 – "RAW STREAMING," "10000" PORT EXAMPLE

6.3.2.(D) IPICO SPORTS ELITE READER "10200" (FIRST-SEEN, LAST-SEEN) PORT

The IPICO Sports Elite Reader allows for truncated "FS,LS" ("First-Seen, Last-Seen") data to be streamed live from the reader unit. This data only records and outputs the first time a tag is recorded by the reader unit and the last time that a tag is recorded by a reader unit. The time between these record reports is, by default, five (5) seconds, but this timeout can be changed in the Webmin client (see 6.2.1).

To connect to the streaming port, open a Microsoft Telnet session window (method prescribed in section 6.3.2) and type the word "open" followed by a space, then the IP (Internet Protocol) address of the reader followed by another space proceeded by the number "10200," as pictured below:

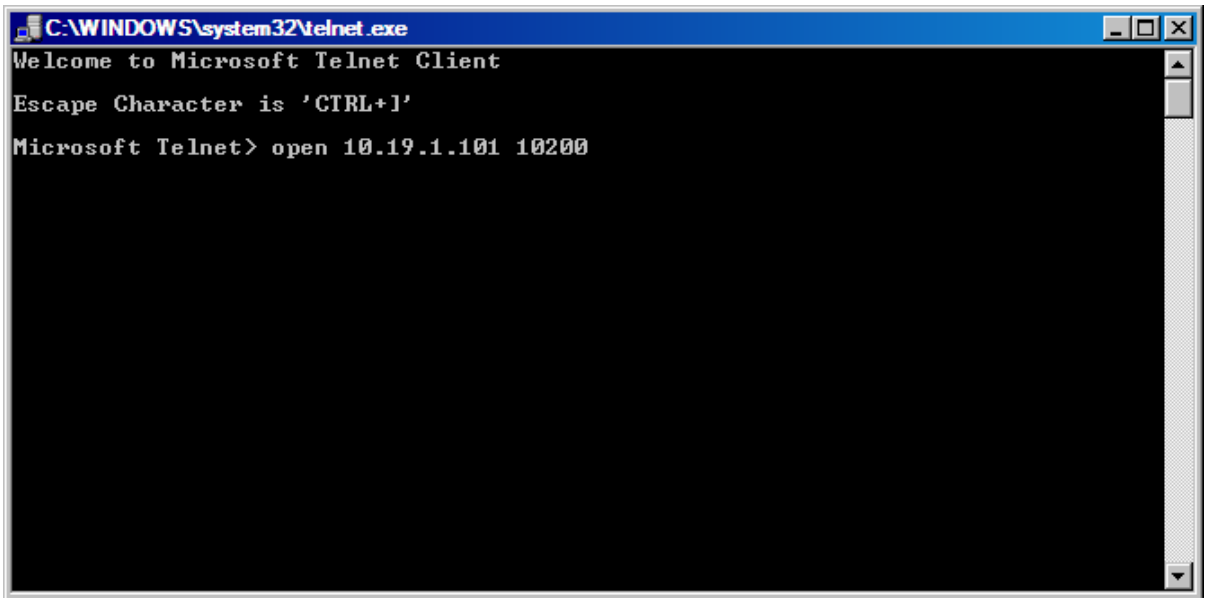


FIGURE – TELNET PORT "10200" SYNTAX

The output of the "10200," or "First-Seen, Last-Seen" port is similar to that of the "10000" ("Raw Streaming") port pictured in section 6.3.2.(B). However, to clarify the record type, and "FS" is appended to the thirty-six (36) character string when the record is a "First-Seen" tag record and an "LS" is appended to the thirty-six (36) character string when the record is a "Last-Seen" tag record.

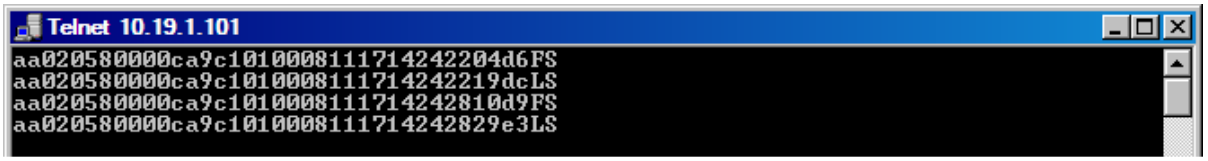


FIGURE 45 – "FIRST-SEEN, LAST-SEEN," "10200" PORT EXAMPLE

This data format is most helpful in determining true event starting time and event ending time. For starting lines, it is recommended that the "LS" ("Last-Seen") time is used. For finish lines and split locations, the "FS" ("First-Seen") data type is recommended.

6.3.2.(E) IPICO SPORTS ELITE READER "10201" (X.M.L. [EXTENSIBLE MARKUP LANGUAGE]) PORT

The IPICO Sports Elite Reader also accommodates the X.M.L. (Extensible Markup Language) data organization format. The "10201," or "X.M.L." port, streams the "FS,LS" ("First-Seen, Last-Seen," "10200") data type of "First-Seen" and "Last-Seen" records in a pre-formatted X.M.L. (Extensible Markup Language) stream.

To connect to the streaming port, open a Microsoft Telnet session window (method prescribed in section 6.3.2) and type the word "open" followed by a space, then the IP (Internet Protocol) address of the reader followed by another space proceeded by the number "10201," as pictured below:

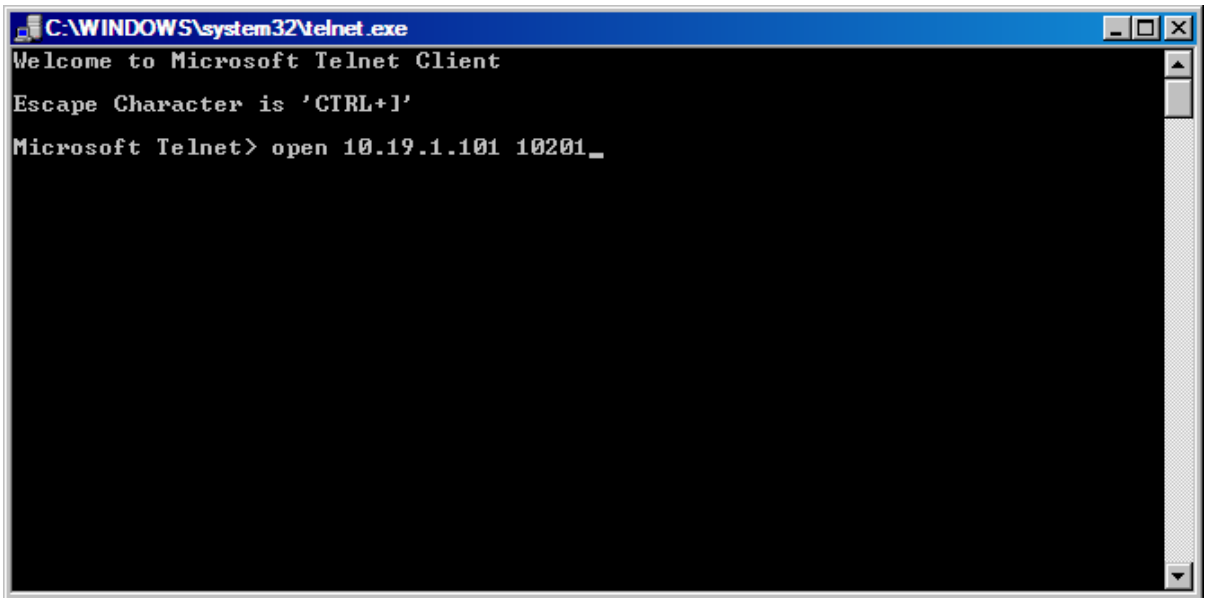


FIGURE – TELNET PORT "10201" SYNTAX

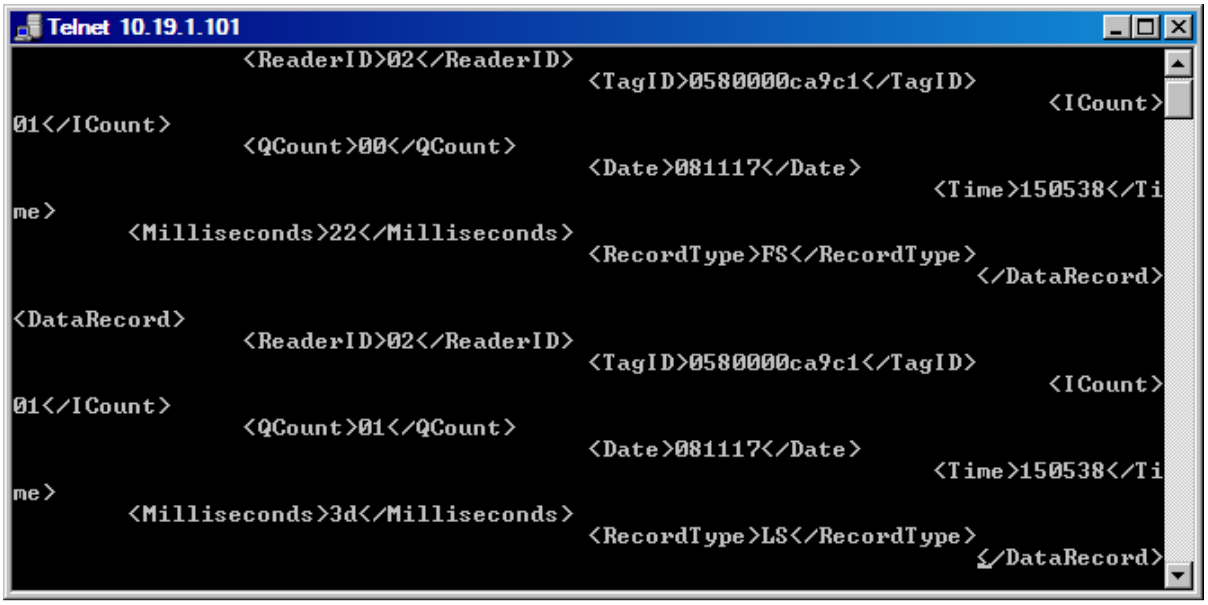


FIGURE 46 – "X.M.L.," "10201" PORT EXAMPLE

6.4 F.T.P. (FILE TRANSFER PROTOCOL)

The IPICO Sports Elite Reader contains a five hundred and twelve (512) M.B. (Megabyte) Compact Flash (C.F.) card for internal tag record storage. Two (2) methods exist for accessing this internal memory for file download before, after, or during an event. The first of these methods is outlined in section 6.2.4 (access through Webmin). The second option for reader access is through the IPICO Sports Elite Reader F.T.P. (File Transfer Protocol) port. While the Webmin allows access to this port, direct access can be obtained by opening an Internet browser (Internet Explorer, FireFox, Opera, et al.) and typing "ftp://" followed by the reader address (in this example, 10.19.1.101).

FIGURE 47 – F.T.P. (FILE TRANSFER PROTOCOL) ACCESS SYNTAX

Once the correct information has been entered, hit the "Enter" or "Return" keyboard key to open an F.T.P. (File Transfer Protocol) session with the IPICO Sports Elite Reader. Depending on the selected browser, the file list returned by the reader may appear differently, cosmetically, however, the list remains the same from browser to browser. The file list returned by the reader will look like the below-pictured F.T.P. (File Transfer Protocol) session:

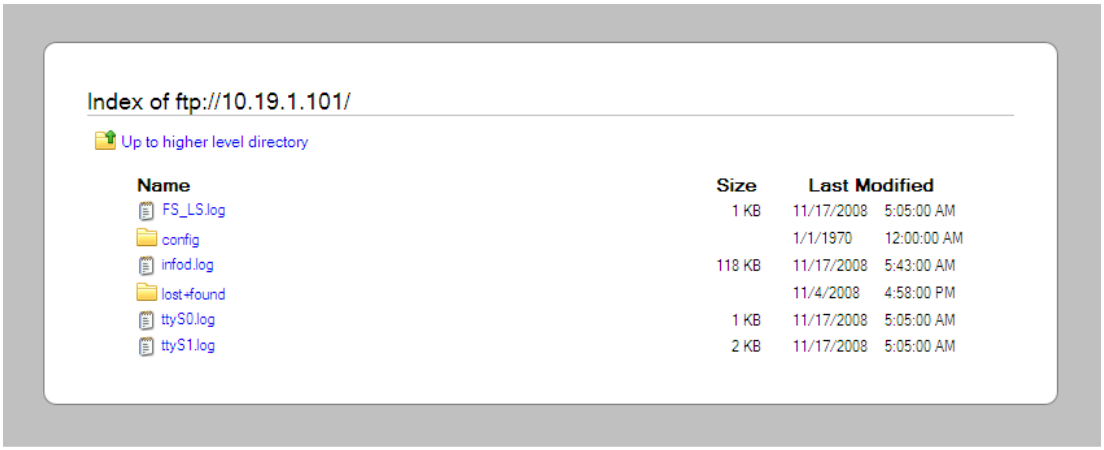

Index of ftp://10.19.1.101/
Up to higher level directory
Name
Size
Last Modified
FS_LS.log 1 KB 11/17/2008 5:05:00 AM
config 1/1/1970 12:00:00 AM
infod.log 118 KB 11/17/2008 5:43:00 AM
lost+found 11/4/2008 4:58:00 PM
ttyS0.log 1 KB 11/17/2008 5:05:00 AM
ttyS1.log 2 KB 11/17/2008 5:05:00 AM

FIGURE 48 – F.T.P. (FILE TRANSFER PROTOCOL) SESSION SCREEN

Each of the files listed in this file list view contain information specific to certain functions of the reader. The tag record files and their appropriate contents are delineated below:

FILE NAME	FILE CONTENTS
FS_LS.log	Log file of all output on the "10200," "FS,LS" port.
ttyS0.log	Log file of all output from IPICO Sports Elite Reader, receiver 1 (left-most)
ttyS1.log	Log file of all output from IPICO Sports Elite Reader, receiver 2 (right-most)

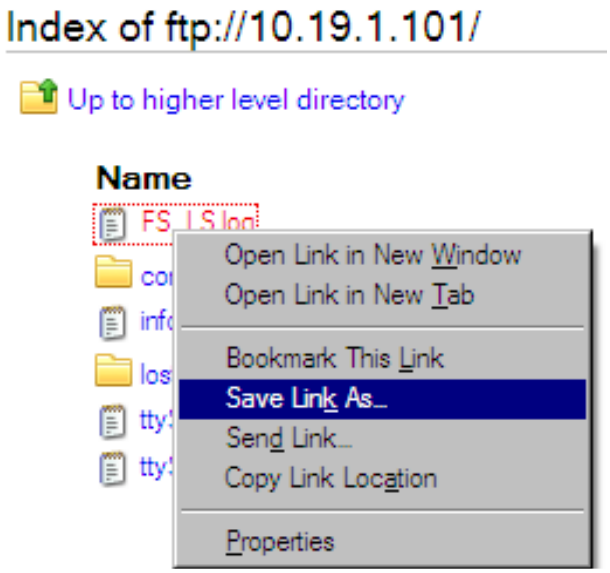


FIGURE 49 – SAVING F.T.P. (FILE TRANSFER PROTOCOL) FILES

To save a file from the F.T.P. (File Transfer Protocol) file list, right click on it and click "Save Link As…," "Save Target As…" or any variant presented by the web browser currently in use. The name of this option will vary depending on the web browser in use. Clicking this option will launch a dialog window prompting the user to specify a location for the file. Save the file where it can be readily accessed.

7 USE OF THE SYSTEM

This section is intended to prepare a user of the IPICO Sports Elite Reader to use the system for the first time.

7.1 SYSTEM SETUP NOTES

1. It is recommended that the user fully charge the internal battery of the IPICO Sports Elite Reader before first use, and before every use.
2. The IPICO Sports Elite Reader internal battery has varying charging times depending on the charging solution selected for the reader (the following times refer to charge cycle times while the reader is not powered). Using an IPICO Sports Fast Charger (IP-0904), the charge cycle is approximately three (3) hours. Using an IPICO Sports Mains Power Supply unit (IP-0903), the charge cycle is approximately nine (9) hours.

7.2 READER / TIMING MAT SETUP

To ensure that the operating environment for the IPICO Sports Elite Reader, the following recommendations and precautions should govern the process for implementation of reader units at course sites.

1. Using the mat configuration rules (4.2), unroll the timing mats in any configuration desired, while observing color-coded configuration.
2. Timing mats should always be placed .5 m (2 ft.) away from any large objects that could be considered conductive (metals, et al.). This will ensure that the radio field produced by the timing mats will operate as desired.
3. Some environments are composed of materials that are inhibitive to radio frequency field operation.
4. Once completely finished with setup, switch on the IPICO Sports Elite Reader system using the system's rotary switch (Figure 1, item 9).

7.3 READER STARTUP AND OPERATION

Booting an IPICO Sports Elite Reader can take anywhere between 1 and 2 minutes. The reader indicates its progress on the front panel of the Delta Module (diagram #4). When initially powered, nearly all of the LEDs on the front panel will become active, as pictured below.

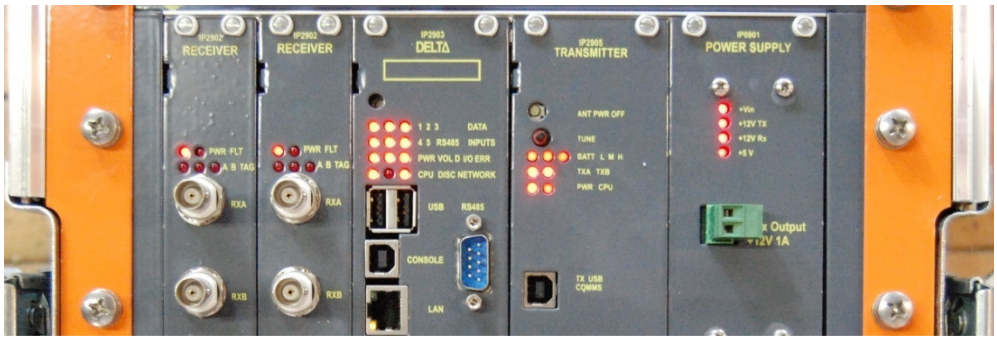


FIGURE – IPICO SPORTS ELITE READER STARTUP

During startup, along with the emitted, rapid beeps, the TXA and TXB lights on the Transmitter Module (diagram #7) will flash in synchronization with the emitted sound. This is normal and is part of the module's start-up tuning process. Once startup has begun, the LEDs on the Delta Module (diagram #4) numbered 1-5 will become active in sequential order during the reader's boot-up process in the order pictured below.

FIGURE 50 – DELTA LED STARTUP PROCESS

The reader has finished the booting process when the "PWR" LED is maintains a solid red state and the "CPU" LED (both located on the Delta Module – diagram #4) blinks at a constant rate. At this point, all of the vital processes of the Elite Reader have started and the reader can now be accessed VIA LAN/Ethernet.

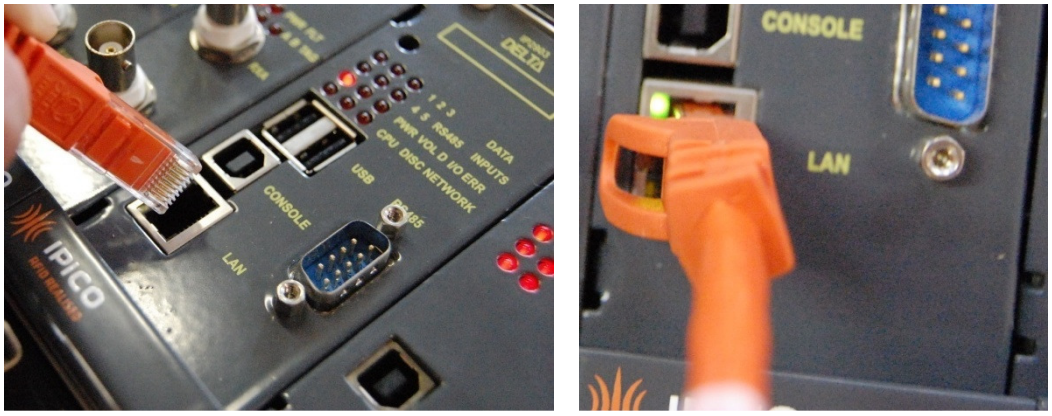


FIGURE 51 – INSERTING THE ETHERNET CROSSOVER CABLE INTO THE LAN COMMUNICATIONS CONNECTOR (FIGURE 1, ITEM 5)

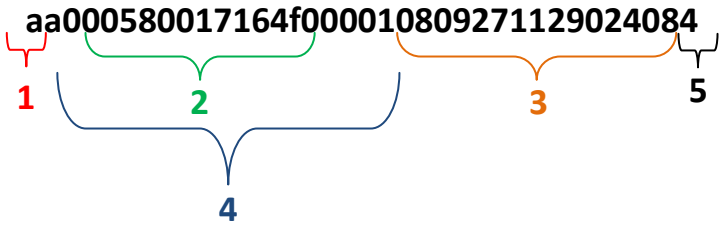
When reader start-up is complete and mat configuration rules have been observed, passing tags over a mat will yield an optimal read height of approximately forty (40) centimeters (1.3 feet).

APPENDIX A – TAG DATA FORMATS

The IPICO Sports Elite Reader outputs different, but related, data formats. While more advanced documentation exists (available upon request), the information contained in this section provides an suitable intermediate background in the IPICO Sports Elite Reader IP-X protocol.

A.1 IP-X PROTOCOL: TAG RECORDS

Tag data records generated by the IPICO Sports Elite Reader are designated in the tag streaming files as those records that have a prefix (opening two [2] characters) of "aa." However, there are two distinctly different formats of tag records. The first of these records is a thirty-six (36) character string resident in the ttyS0 and ttyS1 log files. The anatomy of this string is as follows:



1. "aa" – Tag Record Designation
2. "0580017164f0" – Tag ID
3. "08092711290240" – Date/ Time
4. "00…0001" – Receiver / IRQ ID
5. "LRC" Checksum

1. Tag Record Designation

The prefix of "aa" defines that the record being generated is that of a singular tag read.

2. Tag ID

The IPICO Sports Sportag ID, "0580017164f0." This identification number is always a twelve (12) character string starting with "058." The Sportag production series identification number "0017," merely indicates the series of which this tag is a member.

3. Date / Time

In the example tag string, the date (read from left to right) of "080927" (the first six [6] characters) shows the date to be September 29, 2008. The next eight (8) characters, "11290240" represent the time of day at which the tag was read by the IPICO Sports Elite Reader unit. The time string given in the example reads that this tag was "seen" by the reader at 11:29:02 (HH:MM:SS format). The additional two (2) characters, "40," are represented as hexadecimal digits representing the true "100th"s place. Decoded, the full time reads 11:29:02.64 (HH:MM:SS.MS format).

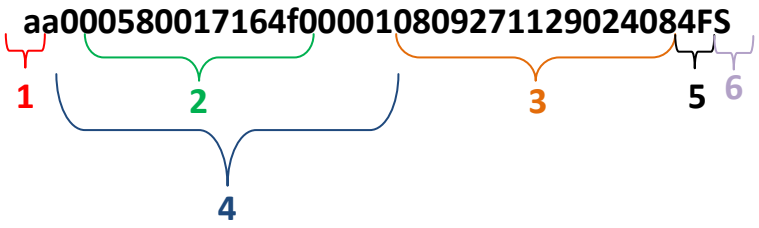
4. Receiver / IRQ (Interrupt Request) ID

Mainly for programmatic use, this pair of ID numbers (represented as "01" and "0001," respectively) indicates the Receiver on which the tag was read ("01" – the left-most receiver) and the ID, where applicable, assigned to an interrupt request.

5. "LRC" (Longitudinal Redundancy Check) Checksum

To ensure that the contents of the tag record are valid, the IPICO Sports Elite Reader performs mathematical verification of the contents of the tag record string. The IPICO Sports Elite Reader reports this "LRC" (Longitudinal Redundancy Check) checksum as the last two (2) characters.

The second tag record format, the "First-Seen, Last-Seen" tag record, does not change the internal makeup of the tag record, however the record will have "First-Seen" ("FS") or "Last-Seen" ("LS") status appended to it, making the tag record string thirty eight (38) characters.



1. "aa" – Tag Record Designation
2. "0580017164f0" – Tag ID
3. "08092711290240" – Date/ Time
4. "00…0001" – Receiver / IRQ ID
5. "LRC" Checksum
6. "FS" ("First-Seen") Designation

1. *Tag Record Designation*

The prefix of "aa" defines that the record being generated is that of a singular tag read.

2. *Tag ID*

The IPICO Sports Sportag ID, "0580017164f0." This identification number is always a twelve (12) character string starting with "058." The Sportag production series identification number "0017," merely indicates the series of which this tag is a member.

3. *Date / Time*

In the example tag string, the date (read from left to right) of "080927" (the first six [6] characters) shows the date to be September 29, 2008. The next eight (8) characters, "11290240" represent the time of day at which the tag was read by the IPICO Sports Elite Reader unit. The time string given in the example reads that this tag was "seen" by the reader at 11:29:02 (HH:MM:SS format). The additional two (2) characters, "40," are represented as hexadecimal digits representing the true "100th"s place. Decoded, the full time reads 11:29:02.64 (HH:MM:SS.MS format).

4. *Receiver / IRQ (Interrupt Request) ID*

Mainly for programmatic use, this pair of ID numbers (represented as "01" and "0001," respectively) indicates the Receiver on which the tag was read ("01" – the left-most receiver) and the ID, where applicable, assigned to an interrupt request.

5. *"LRC" (Longitudinal Redundancy Check) Checksum*

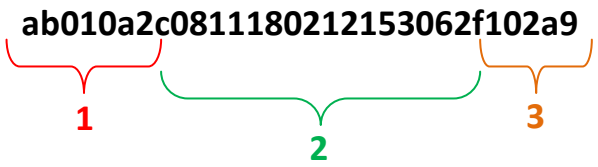
To ensure that the contents of the tag record are valid, the IPICO Sports Elite Reader performs mathematical verification of the contents of the tag record string. The IPICO Sports Elite Reader reports this "LRC" (Longitudinal Redundancy Check) checksum as the last two (2) characters.

6. *"FS" ("First-Seen") Designation*

The "First-Seen" Designation given to the sample tag data indicates that this tag read was the first read of the specific tag in question ("0580017164f0") that the reader has seen. If the tag data were appended with "LS" ("Last-Seen"), it would indicate that the record was the last time at which the sample tag ("0580017164f0") was last seen.

A.2 IP-X PROTOCOL: DATE-TIME FORMAT

The IPICO Sports Elite Reader also uses another record type to differentiate Date-Time functions and notifications from tag record notifications. Prefixed with "ab" instead of simply "aa," these records report the reader's internal time and date and are recorded in ttyS0.log, ttyS1.log and FS_LS.log.



1. "ab010a2c" – Date-Time record Designation
2. "0811180212153062" – Date-Time value
3. "f102a9" – "LRC" Checksum

1. Date-Time record Designation

The "ab010a2c" leading the string signifies the record type, in this case a reader report record "ab," that is a timestamp "a2c."

2. Date-Time value

The Date-Time value "0811180212153062" represents different portions of the reader's internal date and time. The "081118" represents that the IPICO Sports Elite Reader's internal time listed in the order of YYMMDD. Thus, it is November 18, 2008. The "02" proceeding the date signifies that the day of the week is the second (2nd) day, or Tuesday. "12153062" represents the IPICO Sports Elite Reader internal time. In this case, the string is formatted HHMMSS(MS). Thus, the time of day is 12:15:30 P.M. The "62" represents the reader's resolution to the hundredth of a second, and is encoded as a hexadecimal number. When translated to decimal format, the time reads 12:15:30.98. Thus, the internal reader time and date is Tuesday, November 18,2008 at a time of 12:15:30.98 P.M.

3. "LRC" (Longitudinal Redundancy Check) Checksum

To ensure that the contents of records are valid, the IPICO Sports Elite Reader performs mathematical verification of the contents of the timestamp record string.

APPENDIX B – INTERNAL READER BATTERY MANAGEMENT

PRECAUTIONS

It is recommended that the following operational concerns be addressed before operation of the reader for the first time and before operation of the reader after a significant period of disuse.

1. Fully charge the reader's internal battery before the first use of the reader.
2. Fully charge the reader's internal battery before events.
3. The reader's internal battery should be fully charged every two months in the case that the reader unit has not been recently used. This should be done so that the battery is maintained in correct and working order.
4. Should an external battery be connected to the Elite Reader after the battery alert is tripped (a long, continuous audible noise), this alert will continue to sound. This is normal, and the reader will continue operation, but the alert will still be tripped.

TYPICAL CHARGING CHARACTERISTICS

TYPICAL CHARGE CYCLE	**9 hours (Mains Charger, IP-0903)**
	3 hours (Fast Charger, IP-0904)

APPENDIX C – READER SPECIFICATIONS

- Reader power consumption: 6Amps
- External power supply: 12Vdc, 6Amps
- Battery:
  - Characteristics: 12V, 17Ah, 6Kg
  - Time life: 4 years
  - Autonomy: 2.5h when fully charged
  - Charge time: 9h with 12Vdc/ 6Amps charger. 3h with IPICO fast charge charger.
- Weight: 18Kg
- Dimensions: 285mm H x 325mm W x 370mm L (112in H x 128in W x 146in L).
- Temperature rates (mats and reader): 0°C to 50°C
- IP protection:
  - Reader open: IP21
  - Reader closed: IP54
  - Mats: IP68
- Warranty 1 year

APPENDIX D – TROUBLESHOOTING

STARTUP

RECEIVER MODULES

- When the unit powers on, if the Receivers' "PWR" LEDs are not lit, this may indicate that the module is not seated correctly in the reader. To re-seat the module, simply unscrew it, take it out, and carefully slide it back in. This will re-connect all the pins on the card with those internal to the reader.

DELTA MODULE

- If the Delta does not boot or the LEDs of the Delta module seem to periodically "flash," the Delta module's rechargeable AAA batteries need to be replaced or recharged. To do this, unscrew the screws connecting the Delta to the reader casing and carefully remove the Delta module. There are three AAA batteries onboard the Delta and, to ensure that all batteries are charged fully, remove all three and charge or replace them. This needs to be done periodically, recharging them every four (4) to six (6) weeks is recommended. This can be done by powering the IPICO Sports Elite Reader and allowing the unit to run for an hour.
- The Delta Module also has a startup failure notification condition. If the Delta Module fails to start after five (5) tries, the unit will switch off the receiver (Rx) tag read indicator, and the user will not hear any audible signals from the receiver module. This behavior will only occur with the External Buzzer (IP-2911) removed. If this failsafe should trigger, pressing the small, grey reset button (Figure 3, Item 11). If the non-start condition persists, contact IPICO Sports.

TRANSMITTER MODULE

- When booting the reader, the Transmitter module may emit a constant beep, indicating that the reader's mat connections, the TX connections, are out of tune. The reader may attempt to tune when turned on, indicating this state. To tune the reader, press the "Tune" switch on the front of the Transmitter module to tune the reader, rather than waiting for the tuning process to be executed every five minutes. After connecting mats, the readers will likely need to be retuned using the same process.
- If the reader is tuned, but continues to emit a constant beeping and the TXA and TXB LEDs on the front panel of the Transmitter module are still flashing (alternating rapidly), the antenna power may have been turned off. To turn this process back on, locate the button labeled "ANT PWR OFF," located on the Transmitter module. After pressing this button, the reader should stop beeping, and antenna power should be restored.

NETWORK CONNECTIVITY

- Attempting to connect to the reader during its booting process will not be successful. As the reader boots, the LEDs on the front of the Delta module will move in succession through the lights marked "1," "2," "3," "4," and "5." These indicate the progress of the startup of the Delta. The Delta is fully started and functional when the "CPU" light is blinking at a near-constant pace. This ensures that all processes have occurred and that the Delta is fully initialized.

- If the “LAN” port located on the Delta module does not have a green light or an orange light showing, this could be a sign of a potentially more complicated problem, and IPICO Sports should be contacted.
- If the Delta has fully started up and network connectivity is still absent, ensure that the computer being used to access the reader is correctly configured. The IP address of the reader may be different from the IP address of your computer, and they may not be a part of the same network family. To configure your network connection, follow the steps outlined in 6.1.1 (Microsoft Windows XP) or 6.1.2 (Microsoft Windows Vista).
- If network connection difficulties persist, restart the Delta module by finding the recessed button located above the “1,” “2,” and “3” LEDs on the front panel. After pushing the button, the lights on the Delta should light up, and the module will restart. The reader, in its entirety, can also be restarted to help solve network connection issues. To do this, turn the reader power knob to the “Off” position, and allow the Delta to completely shut down (all LEDs are off). Then turn the reader back on and wait for the modules to complete their various start processes.

DATA STREAMING

- If data streams (ports 10000, 10200, 10201) are unresponsive, restart the Delta module according to the process described above. After a full restart, the streaming ports should perform normally. This can also be the case with the input port (9999).
- If trouble with data streaming continues, restart the system by turning the power knob into the “Off” position. Allow all of the modules to complete their shutdown process (wait for the Delta module LEDs to go out). This process may take a couple of minutes.

EQUIPMENT SETUP

- During race day testing, it is important that the data files on the reader are being constantly augmented with data. During pre-race setup, once the readers are fully initialized, ensure that these files are accepting contemporary data. Use the reader’s FTP functionality by opening a web browser or FTP client and navigating to your reader’s IP address. For example, if a reader’s address is 10.19.1.101, the FTP portion of the reader can be accessed by opening a web browser and typing “ftp://10.19.1.101” into the Address bar. If using an FTP client, use the IP address as the FTP address.

APPENDIX E – OPTIONAL ACCESSORIES

FIELD STRENGTH METER (IP-3908)

BATTERY TEST TAG (IP-3907)

USB REGISTRATION READER (IP-3490)

EXTERNAL BUZZER (IP-2911)

FAST CHARGER (IP-0904)

MAINS POWER SUPPLY (IP-0903)